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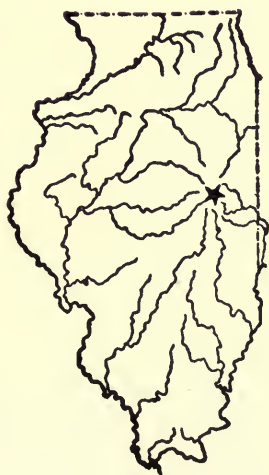
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INCREASING FARM EARNINGS BY THE USE OF SIMPLE FARM ACCOUNTS

By H. C. M. CASE AND M. L. MOSHER



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SUMMARY

Farm accounts kept by nineteen Woodford county farmers led them to improve the organization and operation of their farms in ways that added approximately \$650 to their average net incomes in 1922, the seventh consecutive year in which they kept accounts.

Uniform records kept in a simple farm account book prepared by the University of Illinois provided the means of finding out at what point the farms could be made more profitable.

The changes made on all or part of these farms resulted in (1) better crop yields, (2) larger returns for each \$100 invested in productive live stock, (3) more acres of crops worked per man, (4) more acres of crops worked per horse, and (5) lower expenses for each \$100 of income.

These same nineteen farms are examples of the wide differences in earnings that are found among farms in the same locality. The seven best paying of the nineteen farms, as a yearly average, made 4.52 percent more on the investment than the seven poorest paying ones, or paid the operator \$2,153 more for his labor and management. The differences in management that led to these differences in earnings are analyzed in this bulletin.

No farm is likely to excel in all points of good management. The farm which does fairly well in most of the factors mentioned above (crop yields, returns on productive live stock, crop acres worked per man and per horse, and expenses for each \$100 of income) is more likely to prove profitable than the farm that excels in one or two factors and does poorly in others.

Five farms that were better than the average in four of the five factors discussed earned 9.31 percent on the investment; or, stated another way, they made \$2,465 above all expenses, including 5 percent interest on the investment, to pay for the operator's labor and management. Three farms above the average in only three factors earned 6.63 percent on the investment; or made \$1,568 to pay for the operator's labor and management. Six farms above the average in two factors earned 5.79 percent on the investment; or made \$965 to pay for the operator's labor and management. Five farms above the average in one factor or in no factor earned only 4.03 percent on the investment; or lacked \$65 of paying anything for the labor and management of the operator.

Other factors affect farm earnings, but the five used here to measure farm efficiency indicate some of the more important reasons why farms in the same locality, with similar opportunities, differ so widely in their earnings. Operators can readily apply these measures to their own farm operations and find out at what point their farms might be more efficiently run and their profits thereby increased.

INCREASING FARM EARNINGS BY THE USE OF SIMPLE FARM ACCOUNTS

BY H. C. M. CASE, ASSISTANT CHIEF IN FARM ORGANIZATION AND MANAGEMENT,
AND M. L. MOSHER, ASSOCIATE IN FARM ORGANIZATION AND
MANAGEMENT EXTENSION

As Illinois agriculture has developed, capital invested in farming has increased until in many Illinois counties the average investment per farm amounts to \$30,000 to \$50,000. A farmer using a capital of, say, \$30,000 in his business can well afford to spend the necessary effort to ascertain whether or not that capital is yielding a fair rate of interest for its use. At 5 percent an investment of \$30,000 should yield \$1,500 for the use of the capital alone.

The fact that many farmers are making good returns on their investment while others fail to get adequate pay for the use of their capital indicates the need for a system of accounting which will show the annual farm income and expenses and furnish the basis for an intelligent study of the farm business. (See discussion on "Measuring a Farm's Success," page 182.)

The advantages in keeping a simple financial record of the farm are shown in the results obtained by nineteen Woodford county farmers who were assisted in starting accounts on their farm business by the University of Illinois and the Woodford County Farm Bureau and who kept and closed the accounts for seven successive years. The added profit which came as a result of the record keeping was determined by comparing the income on the nineteen farms at the beginning and at the end of the seven-year period with the income from farms whose operators had kept records for only one or two years, and by studying changes made on individual farms.

These nineteen farm records, kept over seven successive years, and making in all a total of 133 farm-year records, are valuable in show-

NOTE.—The authors wish to acknowledge the work of other men who did much of the supervising of the farm accounts reported herein; namely, Assistant Farm Advisers R. F. Shaffer and P. E. Johnston (now Farm Adviser in Woodford county), and F. F. Elliott and R. L. Donovan, Farm Management Specialists of the Extension Service of the University of Illinois. When the work was begun in 1916 the writers were employed as Extension Specialist in Farm Organization and Management by the University of Illinois and Farm Adviser in Woodford county, respectively, and they have been closely associated with the work since its inception. As head of the Department of Farm Organization and Management and as Vice-Director of the Agricultural Extension Service, Professor W. F. Handschin, now deceased, gave active direction and encouragement to this work.

ing: (1) the benefits which the nineteen farmers realized from the continuous study and improvement of the organization and operation of their farms, as compared with men who had not kept records long enough to benefit materially from their use, and (2) the importance of certain factors affecting the efficiency of the farm business.

The records used in this study are simple financial accounts and not in any sense cost accounts. They include inventories of the farm business taken at the beginning and end of the year and a record of receipts and expenses, together with a record of the amount of products raised on the farm during the year. Cost accounting data secured by the University of Illinois and other institutions have been a valuable aid in helping analyze conditions on the nineteen farms.

This publication does not attempt to establish new facts, but rather it substantiates and emphasizes facts which already are recognized by the most successful farmers. An attempt has been made to present the results obtained by the Woodford county farmers in a way that will point out the advantages in keeping simple financial records on the farm. Only a few simple ways of measuring the farm business are suggested. These same measures can be readily applied by any farmer to his own farm if he will keep a simple but well organized system of accounts.¹

TYPE OF FARMING IN WOODFORD COUNTY

Woodford county, in which this work was conducted, lies north of the central part of the state, in what is recognized as the grain farming section of Illinois. The prevailing soil type is brown silt loam, with some black clay loam on most farms and a little yellow gray silt loam on a few farms. The value of each farm was carefully estimated on the basis of the selling price of similar farms in the same area at the beginning and at the end of the period covered by the study.

More than half the land in the county is planted to cereal crops each year, and corn normally makes up well over half the cereal acreage. Oats rank as the second cereal crop, and with corn make up nearly 90 percent of the total acreage. According to the best information available, about 60 percent of the corn crop is sold from the farms, the sale of corn being the principal source of income.

The live stock produced on the farms is fed almost entirely upon home-raised feeds. Live-stock production is very definitely a part of the farm business and is carried on in large measure as a means

¹ An inexpensive farm account book has been prepared by the Department of Farm Organization and Management especially to make such a study possible. Information concerning it will be sent upon request.

of using farm raised feeds and available labor to the best advantage and to provide manure for the maintenance or improvement of the soil. Approximately 50 percent of the crops is utilized by work horses and other classes of live stock; and live stock harvest directly about 10 percent of the corn crop. In value of sales from the farm, hogs rank second only to corn, the sale of hogs being more than double the combined sales of cattle and dairy products, which are the second largest source of live-stock receipts.

METHOD OF CONDUCTING WORK

During the spring of 1916, the University of Illinois and the Woodford County Farm Bureau cooperated in helping about sixty Woodford county farmers start accounts of their farm business. The simple farm account books used for this purpose were prepared by the University. At the end of the year, forty-eight of these farm accounts were closed and the farmers assisted in analyzing their businesses as represented by the accounts. The number of farm records closed in the county during succeeding years varied from thirty-five in 1917 to one hundred in 1921 and ninety-nine in 1922. Nineteen of the original forty-eight men continued to keep and close their farm records during each of the seven years.

In addition to the service given these nineteen seven-year-record keepers with their accounts, most of them, along with about 130 other farmers, were visited by the farm adviser during 1916 and 1917 and their farms studied with special reference to soil and cropping problems. Written reports of such visits were made to all the men whose farms were studied. These reports included a statement of the plant-food balance; that is, the approximate amounts of nitrogen and phosphorus being taken from the fields in the harvested crops and the amounts being returned to the soil by means of legumes and manure. Rotations of crops and soil treatment were recommended that would help maintain the nitrogen supply, replenish the mineral elements in the soil and provide for a uniform distribution of labor thruout the year.

Aside from the work on the farm records, the men who kept farm accounts thruout the seven years secured no more service from the farm adviser than other members of the farm bureau with whose farms the nineteen farms are compared.

During most of the seven years, auto tours were conducted to a few farms on which various practices were shown by the farm account book to have been especially profitable. During three of the seven years special farm management exhibits were featured by the farm bureau at the district fair held in the county. All these activities led individual farmers to adopt more profitable practices.

BENEFITS REALIZED FROM KEEPING FARM ACCOUNTS

When records were started in 1916, the managerial abilities of the nineteen farmers who continued the accounts for the seven-year period were very little superior to those of other farmers in the same community who kept records on their farm business the same year, and, in addition, the nineteen farms were earning about the same rate of interest on the entire capital investment as other farms in that section. The nineteen farmers that year realized a net return of 7.09 percent on their entire capital investment, while twenty-nine other farmers in the same county who started records at the same time but who failed to continue them thru the seven-year period realized 6.92 percent on their capital investment, or only .17 percent less than the nineteen farmers. This is shown in Fig. 1 and Table 1.

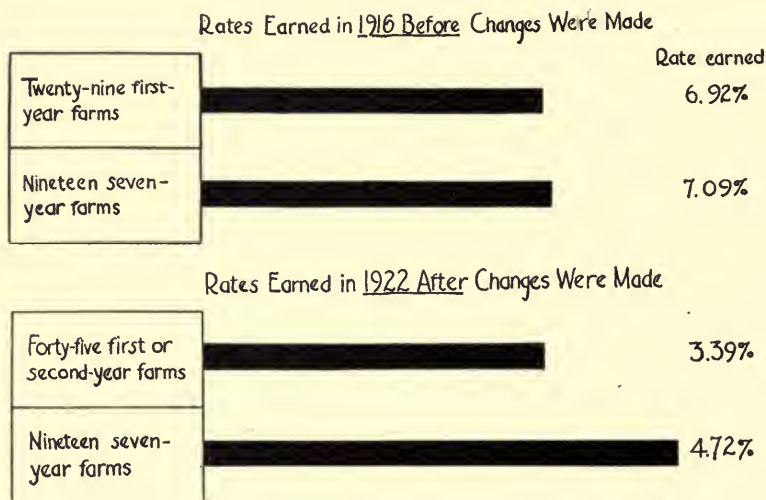


FIG. 1.—BENEFITS REALIZED BY NINETEEN FARMERS FROM THE KEEPING OF SIMPLE FARM ACCOUNTS

The nineteen men who kept accounts for seven consecutive years realized 1.33 percent more on their total capital investment in 1922 than farmers who had just started to keep records. Even allowing for the fact that these nineteen farmers made a slightly higher rate on their investment than some of their neighbors the year the records were started, they still made 1.16 percent more in 1922 as a result of their accounts.

The first and third bars in the above chart represent the farms which did not keep continuous records. Altho the rates earned in 1916 and 1922 varied greatly, the two bars are made the same length because they both represent earnings which had not been influenced by the keeping of accounts. Differences in farm earnings due to variations in price levels are eliminated in this way. The second and fourth bars are then made proportional to the first and third bars respectively.

It also will be noted from Table 1 that the investment per acre on farms in the two groups was approximately the same.

In 1922, however, after seven years of record keeping the nineteen farmers received an average net return of 4.72 percent on their investment, while forty-five other men who began to keep accounts in 1921 and 1922 received an average net return of 3.39 percent on their investment, or 1.33 percent less than the nineteen farmers who had been keeping the accounts for seven years. Even allowing for the slightly higher rate (.17 percent) earned by the nineteen farmers in their first year of record keeping (1916) above that earned by the twenty-nine other farmers in their neighborhood that year, it would appear that these nineteen men had profited in 1922 to the extent of 1.16 percent on their entire capital as a result of improving the organization of their farms and the methods followed in production.

It should be pointed out that the increased earnings of 1.16 percent credited to the farm management work are conservative, inasmuch as the forty-five farmers who made 1.33 percent less on their capital investment than the nineteen farmers, already had adopted improved practices by 1922 and had put their farms on a better paying basis even tho they had not previously kept records.

The small difference in the investment an acre at the beginning and end of the seven-year period on the nineteen farms was due mainly to increases in the investment in live stock, machinery, and equipment, as shown in Table 10 (lines 6 and 8), page 178.

The average capital investment on the nineteen farms in 1922 was \$56,490 (Table 10, line 3). The additional net return of 1.16 percent

TABLE 1.—A COMPARISON OF THE EARNINGS AND THE NITROGEN LOSSES ON FARMS WHERE UNIFORM FARM ACCOUNTS WERE KEPT FOR A PERIOD OF YEARS AND ON FARMS KEEPING ACCOUNTS FOR THE FIRST TIME

	1916		1922	
	Nineteen 7-year farms	Twenty- nine other farms	Nineteen 7-year farms	Forty-five other farms
Rate earned on investment ¹ ..	7.09%	6.92%	4.72%	3.39%
Labor and management wage ²	\$1,458.00	\$1,555.00	\$340.00	\$-264.00
Total investment per acre ² ...	\$ 262.40	\$ 265.61	\$269.40	\$ 266.40
Net income per acre.....	\$ 18.61	\$ 18.37	\$ 12.71	\$ 9.03
Net loss of nitrogen per acre..	25.4 lbs.	25.7 lbs.	27.2 lbs.	30.2 lbs.

¹For full explanation of these terms, *rate earned on investment* and *labor and management wage*, see note on page 182.

²These valuations represent conservative selling prices in 1916 and 1922. During 1919 and 1920 farms frequently sold in this section of the state for more than \$400 an acre.

The minus sign (—) in front of a quantity indicates a loss.

on this average capital amounted to \$655.28, and it may be said, therefore, that the nineteen farmers who kept records for the seven-year period realized an average net income in 1922 which was larger by approximately \$650 than would have been the case had they not used the accounts to determine how they might improve their farm business.

Of still greater importance to the future of agriculture is the fact that the nineteen farms showed a lower loss of soil nitrogen at the end of the seven-year period than did the forty-five farms that had smaller incomes.¹ Considering the improved crop yields on the nineteen farms an actual decline in the loss of nitrogen for a given amount of produce is shown at the end, as compared with the beginning of the seven-year period. This is of special importance to the public and to landowners who expect to pass their land on to their children, and so are concerned with the well-being of the coming generation of farmers and the future of the agricultural industry.

While it is not the purpose of this publication to go into detailed analysis of farm organization problems, the statement that these nineteen farms had changed their practices calls for at least an illustration of some of the changes made. Such an illustration is offered by one of the men who had formerly sowed more than 80 percent of his crop land to corn and oats, and had used blue grass for a hog pasture. According to his own statement, after he began to study his business he made the following changes: (1) he adopted a rotation of corn, corn, oats, wheat and mixed clovers, with an extra field for alfalfa; (2) the change in the cropping plan, together with an increased amount of live stock, provided labor for the same number of men thruout most of the year; (3) after the new rotation of crops was established, he reduced the number of work horses by five and introduced a tractor to help handle the peak load of labor in preparing crop land in the spring; (4) the alfalfa pasture and the use of a self-feeder enabled him to market spring pigs in September before the drop in prices; (5) the use of limestone and phosphate, together with the new rotation of crops, increased the yields of corn 15 to 20 bushels to the acre, and other yields were correspondingly good. In this case the farmer had increased his crop yields, had changed his method of handling hogs so that the enterprise was more profitable,

¹ The actual loss of nitrogen on the nineteen farms in 1922 was 27.2 pounds per acre, which was 1.8 pounds per acre greater than the loss in 1916 (see Table 1). However, the average crop yields in 1922 were 13.7 points higher than in 1916 (Table 10, line 50). Hence, as compared to the total crops produced, the actual loss of nitrogen had been reduced on these nineteen farms. The loss of nitrogen on the other farms apparently increased out of proportion to the slight increases in crop yields, for they showed an increase of only 4 percent in crop yields and incurred an additional loss of 4.5 pounds of nitrogen per acre.

and was making better use of his man and horse labor. The advantages gained by these changes resulted in greatly reduced expenses in proportion to the farm income.

Altho the earnings of the nineteen farms are shown to have been well above the average of all the other farms studied, there was a wide difference in the earnings on the nineteen farms. The remainder of this bulletin will show how certain factors were responsible for these differences.

THE EFFECT ON FARM EARNINGS OF GOOD AND POOR FARM ORGANIZATION AND MANAGEMENT

The seven best paying farms of the nineteen on which seven-year records were kept earned an average yearly rate of 8.80 percent on the investment during the seven-year period. The seven poorest paying farms earned only 4.28 percent, or 4.52 percent less on the investment than the seven best paying farms. The rate earned on the investment is the percentage which the net annual income from the investment is of the total capital invested in the farm business; it represents the return to the operator for the use of his capital and his managing ability.

Another measure of profits in farming is the labor and management wage, which is the money the operator of the farm makes above all expenses and 5 percent interest on the capital invested, as pay for his own labor and management ability. The average annual labor and management wage was \$2,153 greater on the seven best paying farms than on the seven poorest paying farms.

That these differences in farm earnings were due mainly to differences in managing skill is indicated by a study of some of the separate factors affecting the efficiency of the nineteen farms. The more important differences between the highest and the lowest paying farms are shown in Table 2, and are further explained below:

(1) The crop index on the seven farms earning the highest rate on the investment was 127.5, as compared to 123.1 on the seven poorest paying farms. This is a difference of 4.4 points in favor of the seven best paying farms. (The crop index as used here is the percentage which the average yield of corn, oats, and wheat on the farms studied was of the average yields of corn, oats, and wheat in the county, taking into consideration the acreage of the crops grown.)

(2) The average returns from \$100 invested in productive live stock amounted to \$138.15 on the seven best paying farms and only \$77.16, or \$60.99 less, on the seven poorest paying farms. (By productive live stock is meant all live stock except horses and mules. This is a general measure of the efficiency of the live-stock enterprise as a whole. A more complete analysis of the live-stock enterprises

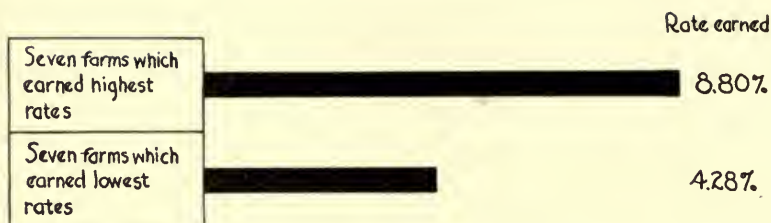


FIG. 2.—THE SEVEN BEST PAYING FARMS EARNED 4.52 PERCENT MORE ON THE INVESTMENT THAN THE SEVEN LOWEST PAYING FARMS

These differences in farm earnings were due mainly to managing skill. Some of the more important factors affecting the efficiency of the farms are listed in Table 2, and are briefly discussed in this section.

can be made readily by studying the returns for each \$100 invested in each class of live stock.)

(3) The crop acres worked per man on the seven best paying farms averaged 89.1 acres for the seven-year period, while on the seven poorest paying farms only 79.4 crop acres were worked per man. (The crop acres worked per man is the total number of acres in harvested crops handled per man, excluding all permanent pastures but including annual pastures such as oats and rape, which require considerable labor each year for seeding.)

(4) The crop acres worked per horse averaged 20.5 acres on the seven best paying farms even tho tractors were used only 12.2 percent of the time, as compared with 20.4 acres per horse on the seven less profitable farms, where tractors were used 57.1 percent of the time. (The crop acres worked per horse¹ are determined in the same way as the crop acres worked per man.)

(5) The expenses incurred for each \$100 of gross income averaged \$31.98 on the seven best paying farms, while on the seven poorest paying farms it amounted to \$52.68, or \$20.70 more.² These expenses

¹ In this bulletin, the term *crop acres worked per horse* disregards the use of the tractor. However the proportion of the seven-year period that a tractor was included as part of the farm equipment is shown in each of the tables. Crop acres worked per horse is a desirable measure for comparing the operating efficiency of different farms when a comparison of the crop yields of the farms can also be made and when no tractors are used; or it serves as a good measure of operating efficiency when all farms in the group are using tractors. When tractors are used to provide part of the farm power on part of the farms it is necessary to recognize that fact when studying the use of labor. When a comparison of tractor and non-tractor farms is to be made, the average-sized corn belt farms having tractors should, on the average, show from 5 to 10 crop acres more worked per horse than the non-tractor farms. Since few tractors were used on these farms when the study was begun, no attempt is made in this publication to study the place of the tractor on the farms.

² While this measure of farm efficiency has not been used generally in farm management studies, it does provide a means of emphasizing the importance of keeping operating expenses low in relation to the gross income.

TABLE 2.—A COMPARISON OF THE SEVEN HIGHEST AND THE SEVEN LOWEST PAYING OF THE NINETEEN FARMS THAT KEPT RECORDS CONTINUOUSLY FOR SEVEN YEARS

	(GROUP 1) Average of 7 farms earning highest rates	(GROUP 2) Average of 7 farms earning lowest rates	Difference between the two groups
Rate earned on investment	8.80%	4.28%	4.52%
Labor and management wage....	\$2,211.00	\$ 58.00	\$2,153.00
1. Crop index.....	127.5	123.1	4.4
2. Returns from \$100 invested in productive live stock.....	\$ 138.15	\$ 77.16	\$ 60.99
Percent of income from all live stock.....	50.8%	45.9%	4.9%
3. Crop acres worked per man...	89.1	79.4	9.7
4. Crop acres worked per horse..	20.5	20.4	.1
Percent of years with tractors.	12.2%	57.1%	-44.9%
5. Expense per \$100 gross income	\$ 31.98	\$ 52.68	\$ -20.70
Investment per acre	\$ 278.00	\$279.00	\$ -1.00
Net income per acre.....	\$ 24.47	\$ 11.94	\$ 12.53
Size of farm, acres.....	162.8	211.1	-48.3

NOTE.—Group 1 includes Farms 1, 2, 3, 4, 5, 6, and 7; Group 2 includes Farms 13, 14, 15, 16, 17, 18, and 19. Each group is an average of the records of seven farms over a period of seven years, or an average of 49 annual farm records. Detailed information concerning the results on each farm are shown in Table 9, pages 174 to 177.

include all cash operating expenses, the value of the operator's own labor and the labor of members of his family, and the depreciation on all farm equipment, including buildings. They do not include feed purchased, feed fed to work horses, or any charge for the use of land and capital.

The influence of these five factors on farm earnings will be shown further by selecting the seven farms ranking highest in each factor and the seven farms ranking lowest and comparing the success of the two groups. Cost accounting investigations, as well as other studies of farm earnings made in Illinois and other states, indicate that these are important measures of relative managerial ability. Additional measures of the efficiency of farms are suggested on pages 172 and 173.

THE EFFECT ON FARM EARNINGS OF GOOD AND POOR CROP YIELDS

While extremely high crop yields are not necessarily an indication of profitable farming, it is generally recognized that good crop yields are essential to the best net returns in farming. We find in this study that the seven farms which secured the highest crop yields earned 7.09 percent on the total farm investment, while the seven farms with

the lowest crop yields earned 5.73 percent, a difference of 1.36 percent in favor of the group having the highest crop yields (Fig. 3 and Table 3). The difference in the labor and management wage on the two groups of farms was \$532 in favor of the farms with the largest crop yields. The crop index shows that the yields on the seven highest yielding farms were 33.8 percent larger than the county average, while the seven lowest yielding farms had yields 15.8 percent larger than the county average, a difference of 18 percent of the average county yields in favor of the higher yielding farms.

A further study of Table 3 will show that the seven farms with the best crop yields were as an average better in the returns per \$100 invested in productive live stock, in the crop acres worked per man, and in the expense per \$100 gross income, than the farms with lowest crop yields. The farms with the lower yields showed a larger number of crop acres worked per horse, but this was probably due to the fact that tractors were used more of the time on these farms. Of the seven farms with the highest crop yields, five were among the seven best paying farms, as shown in Table 2.

While all the difference in farm earnings between the two groups of farms cannot be attributed to the difference in crop yields, it is evident that good crop yields are an important factor in making the farm pay. By referring back to Table 2, it will be noted that the crop index on the seven farms making the highest rate on the investment was larger than the crop index on the seven lowest paying farms by 4.4 percent.



FIG. 3.—THE IMPORTANCE OF GOOD CROP YIELDS IN MAKING THE FARM PAY

Of the nineteen farms the seven making the biggest crop yields earned an average of 1.36 percent more on the total farm investment than did those which had the smallest crop yields.

NOTE.—Thruout this bulletin the method used for analyzing the effect of a given factor on farm earnings is to compare the seven farms ranking highest in respect to that factor with the seven farms ranking lowest in respect to the same factor. The reader should note that the farms are regrouped in studying each factor and that the same seven farms do not occur in any two groups. Seven farms were selected in order to have about one-third of the farms in the upper group and one-third in the lower group. This eliminated a few farms between the two groups which were only slightly different from farms in both the upper and the lower groups. The footnotes under Table 2, 3, 4, 5, 6, and 7 indicate which farms are included in the groups represented in the table.

The importance of crop yields is again shown in the study of individual farms. Farm 2, which produced the best yields for the seven-year period of any of the nineteen farms, earned the highest labor and management wage and next to the highest return on the investment of any of the nineteen farms. Farm 19, which produced the lowest yields, earned the lowest rate on the investment and had the lowest labor and management wage. (Table 9, line 50. For all references to individual farms, see this table, on pages 174-177.)

Also a study of Table 11 (lines 44, 46, and 48) will show that in 1922, in several counties of the state, the farms which earned the best rates on the investment produced, in general, higher yields of all crops than did the farms which earned the lowest rates on the investments. In several cases the benefit of good crop yields was overbalanced by inefficiency in other parts of the farm business. For example, on Farms 14 and 18 the benefits from good crop yields were lost to the operators because of poor returns from live stock, to which part of the crops were fed; because of high expenses in proportion to receipts; and because man and horse labor were not used efficiently. Other inefficient management may also have been in part responsible. On the other hand, Farms 1 and 3, which were two of the most profitable farms for the seven-year period, were among the five farms ranking lowest in crop yields. However, both of these farms were better

TABLE 3.—THE SEVEN FARMS HAVING THE HIGHEST CROP YIELDS COMPARED WITH THE SEVEN FARMS HAVING THE LOWEST CROP YIELDS

	(GROUP 1) Average of 7 farms with highest crop yields	(GROUP 2) Average of 7 farms with lowest crop yields	Difference between the two groups
Rate earned on investment	7.09%	5.73%	1.36%
Labor and management wage	\$1,463.00	\$931.00	\$532.00
1. Crop index	133.8	115.8	18.0
2. Returns from \$100 invested in productive live stock	\$ 123.50	\$ 98.08	\$ 25.42
Percent of income from all live stock	56.1%	38.2%	17.9%
3. Crop acres worked per man . . .	82.6	80.2	2.4
4. Crop acres worked per horse . .	19.0	21.0	-2.0
Percent of years with tractors . .	8.2%	34.7%	-26.5%
5. Expense per \$100 gross income .	\$ 38.36	\$ 43.84	\$ -4.59
Investment per acre	\$ 297.00	\$281.00	\$ 16.00
Net income per acre	\$ 21.07	\$ 16.12	\$ 4.95
Size of farm, acres	160.0	214.6	-54.6

NOTE.—Group 1 includes Farms 2, 7, 18, 14, 4, 5, and 6; Group 2 includes Farms 19, 12, 3, 8, 16, 15, and 11. While Farm 1 had a lower crop index than Farms 16, 15, and 11, it was left out of this group because it is on the yellow-gray silt loam type of soil, while the other farms are on brown silt loam and black clay loam, which are naturally much more productive types of soil.

than the average in the returns from live stock, in the use of man and horse labor, and in low expenses in proportion to receipts. Also, it may well be noted that Farms 3, 8, 11, and 12, which ranked low in crop yields, do not appear in the group showing the lowest rate earned. (Table 9, lines 50, 52, 39, 40, and 37.)

The conclusion from a study of all these data relating to crop yields, as well as the conclusion of farmers after long years of experience, is that good crop yields are essential for the best net returns from the capital invested, but that good yields must be secured at a reasonable cost, including man labor, horse labor, and other items. When crops are fed on the farm, profits from good yields are not finally realized unless the live stock is well handled and is of a quality which makes good use of feed.

While crop yields are treated as a single factor in this discussion, it will be recognized that good crop yields are the result of many different factors, among which the following are highly important: the rotation of crops, including the growing of deep-rooted legumes; the careful use of all manure; the use of limestone and phosphate where needed; the thoro drainage of all wet land; the use of good seeds of proved high-yielding and good quality strains, and the treatment of such seed for smut or the testing of it for disease; the inoculation of legumes where the soil is not already inoculated; the use of good tillage methods; the planting of seed at the right time; and avoiding or combating diseases and insects with the most approved methods.

Increased crop yields resulting from improved farm practices do not necessarily mean producing more grain per farm. However, changes in practice may reduce the cost of production and in this way increase the profit from the farm as a whole. A better rotation of crops, including legumes, would decrease the grain acreage on many Illinois farms but would increase the acre yield of land left in crops.

THE EFFECT ON FARM EARNINGS OF GOOD AND POOR USE OF LIVE STOCK

Practically all the nineteen farms had well-bred live stock, but the returns which the different farmers received from this source were not in proportion to their investments in live stock. The seven farms showing the highest returns from \$100 invested in productive live stock (Group 1) earned 7.95 percent on the total farm investment, compared with 4.96 percent earned by the seven farms showing the lowest returns (Group 2). This was a difference of 2.99 percent in favor of the farms in Group 1. The difference in the labor and management wage was \$1,530 in favor of the farms in Group 1. (See Fig. 4 and Table 4.)



FIG. 4.—SUCCESS IN FARMING IS ASSOCIATED WITH THE SUCCESS OF THE LIVE-STOCK ENTERPRISES

The seven farms with the best live-stock returns earned 3 percent more on the total farm investment than the seven with the lowest returns from live stock.

The farms of Group 1, making the best returns for each \$100 invested in productive live stock, received a return of \$147.34, as compared with a return of \$66.42 from the farms in Group 2, a difference of \$80.92 in favor of the farms in Group 1. Of the seven farms with the best returns from each \$100 invested in productive live stock, five of the farms were also among the seven best paying farms shown in Table 2. It will be noted that the men who received the highest returns from live stock had better crop yields, worked more crop acres per man and per horse, and had lower expense per \$100 gross income than the men who received the lowest returns from live stock.

TABLE 4.—THE SEVEN FARMS MAKING THE BEST RETURNS FROM PRODUCTIVE LIVE STOCK COMPARED WITH THE SEVEN FARMS MAKING THE LOWEST RETURNS

	(GROUP 1) Average of 7 farms making best returns from productive live stock	(GROUP 2) Average of 7 farms making lowest returns from productive live stock	Difference between the two groups
Rate earned on investment	7.95%	4.96%	2.99%
Labor and management wage	\$2,018 00	\$488 00	\$1,530.00
1. Crop index	123.0	121.6	1.4
2. Returns from \$100 invested in productive live stock	\$ 147.34	\$ 66.42	\$ 80.92
Percent of income from all live stock	53.5%	31.3%	22.2%
3. Crop acres worked per man . . .	92.7	79.1	13.6
4. Crop acres worked per horse . .	21.6	19.6	2.0
Percent of years with tractor . . .	28.6%	40.8%	-12.2%
5. Expense per \$100 gross income	\$ 34.94	\$ 45.64	\$ -10.70
Investment per acre	\$ 272.00	\$273.00	\$ -1.00
Net income per acre	\$ 21.65	\$ 13.57	\$ 8.08
Size of farm, acres	191.4	216.1	-24.7

NOTE.—Group 1 includes Farms 2, 4, 11, 5, 1, 3, and 16; Group 2 includes Farms 19, 9, 14, 17, 10, 13, and 12.

The importance of productive live stock as a factor affecting farm profits is shown again in Table 2. The seven farms making the highest returns on the total farm investment received an average of \$138.15 for each \$100 invested in productive live stock, compared with \$77.16 received by the seven farms which earned the lowest returns on the total farm investment.

The importance of productive live stock is shown again in the study of individual farm records. Farm 2, which made the best labor and management wage for the seven-year period and earned next to the best rate on the total farm investment of any of the nineteen farms, showed the best average returns for each \$100 invested in productive live stock. On the other hand, Farm 19, which made the lowest annual labor and management wage and the lowest rate on the total farm investment, showed the lowest returns for each \$100 invested in productive live stock. (See Table 9, line 52.)

Also a study of Table 11, line 51, will show that in 1922 in several counties of the state farms which made the best rate on the total farm investment invariably made good returns on the money invested in productive live stock.

It should be noted that the seven farms with the highest earnings, shown in Table 2, and the seven farms with the best returns for each \$100 invested in productive live stock, shown in Table 4, had more live stock than their less successful neighbors. This is explained in part by the fact that all farms have considerable cheap feed which can be marketed profitably only when sold in the form of live stock and live-stock products. Sufficient live stock is needed on all farms to provide a means of marketing such feeds to advantage.

As in the case of crop yields, the measure of live-stock returns is treated as a single factor in this discussion. It is recognized, of course, that profits from live stock are dependent upon many factors, among which the following are highly important; the wise selection of feeds; the efficient use of roughages and unmarketable grain; the home

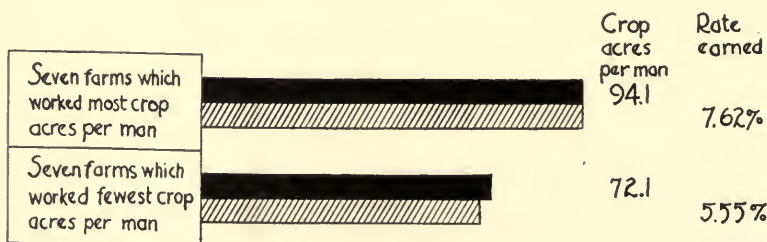


FIG. 5.—EFFICIENT USE OF MAN LABOR IS AN ESSENTIAL PART OF GOOD FARM MANAGEMENT

The seven farms working the most crop acres per man worked 22 acres more per man and earned 2.07 percent more on the total farm investment than the seven working the fewest crop acres.

production of legume forage and the careful purchase of needed supplemental feeds; careful management in relation to sanitation; the selection of live stock which will efficiently produce the quality of live stock and live-stock products which the consumer wants; and the marketing of live stock and live-stock products at the seasons of most favorable price.

THE EFFECT ON FARM EARNINGS OF THE NUMBER OF CROP ACRES WORKED PER MAN

The more successful farmers usually work a large number of crop acres per man without reducing the yield of crops, and at the same time they produce more live stock per man than less successful farmers. In this study, the seven farms that worked the most crop acres per man (Group 1; 94.1 acres) earned 7.62 percent on the total farm investment, while the seven farms that worked the fewest crop acres per man (Group 2; 72.1 acres) earned 5.55 percent on the total investment. This is a difference in favor of the farms of Group 1 of 2.07 percent on the total farm investment and of 22 acres of crops worked per man. (These facts are further shown in Fig. 5 and Table 5.) The labor and management wage on the two groups of farms was \$1,202 in favor of the farms in Group 1, the farms working the most crop acres per man.

TABLE 5.—THE SEVEN FARMS WORKING THE MOST CROP ACRES PER MAN COMPARED WITH THE SEVEN FARMS WORKING THE FEWEST

	(GROUP 1) Average of 7 farms which worked most crop acres per man	(GROUP 2) Average of 7 farms which worked fewest crop acres per man	Difference between the two groups
Rate earned on investment.....	7.62%	5.55%	2.07%
Labor and management wage....	\$1,962.00	\$760.00	\$1,202.00
1. Crop index.....	122.6	125.9	-3.3
2. Returns from \$100 invested in productive live stock.....	\$ 139.94	\$ 86.57	\$ 53.37
Percent of income from all live stock.....	48.0%	38.4%	9.6%
3. Crop acres worked per man...	94.1	72.1	22.0
4. Crop acre worked per horse...	22.1	20.2	1.9
Percent of years with tractors	40.8%	40.8%	0.0%
5. Expense per \$100 gross income	\$ 35.51	\$ 46.66	\$ -11.15
Investment per acre.....	\$ 268.00	\$291.00	\$ -23.00
Net income per acre.....	\$ 20.45	\$ 16.15	\$ 4.30
Size of farm, acres.....	210.4	180.2	30.2

NOTE.—Group 1 includes Farms 1, 2, 5, 10, 16, 11, and 3; Group 2 includes Farms 12, 18, 15, 6, 13, 7, and 14.

A study of Table 5 further emphasizes the importance of the efficient use of man labor. While the crop yields were slightly higher on the seven farms working the fewest crop acres per man, it will be noted that the returns for each \$100 invested in productive live stock, the crop acres worked per horse, and the expenses for each \$100 of gross income are in favor of the farms working the most crop acres per man. Four of the seven farms ranking highest in this factor are also to be found among the seven best paying farms, as is shown in Table 2.

As in the case of factors previously discussed, all the difference between the two groups of farms cannot be attributed to the difference in the number of crop acres worked per man. However, it is evident that this factor is one of the important ones influencing farm earnings. The farms shown in Table 2 as earning the highest rate on the total farm investment worked 9.7 acres more per man than the seven farms earning the lowest rate on the investment.

The importance of using man labor efficiently is shown again in the study of individual farms. Farms 1 and 2, which made the best net profits for the seven-year period, as indicated by the rate earned on the total investment and also by the labor and management wage, worked more crop acres per man than any of the other nineteen farms (Table 9, line 39).

While the efficient use of man labor is one of the essential factors of good farm management, a large acreage of crops worked per man is not necessarily an indication of efficient work, since the handling of a large acreage may be made possible by less careful work. For example it will be noted in Table 9, line 39, that Farms 16 and 19 worked more than the average number of crop acres per man, but the crop yields on those farms were considerably below the average yields for the entire group of farms. The land on Farms 16 and 19 was naturally as productive as that on most of the other farms; which fact leads to the conclusion that the work on crops was not handled in the most efficient way.

The efficient use of man labor is accomplished thru giving attention to a number of factors, among which the following are important: the adoption of a rotation of crops which will give a good distribution of man labor thruout the growing season; the feeding off of crops to live stock (about 10 percent of the corn crop on these farms was so used); the combining of live-stock and crop production so as to utilize labor more evenly thruout the year; arranging farm operations to utilize rainy days and slack periods for repairing and odd jobs so that such work will not interfere with the field work; and carefully arranging the fields and farmstead to facilitate the carrying out of farm operations with the least effort.

THE EFFECT ON FARM EARNINGS OF THE NUMBER OF CROP ACRES WORKED PER HORSE

The cost of horse labor frequently exceeds the cost of man labor in crop production. This is not generally realized, since a large part of the cost of horse labor is represented in the feed which is produced on the farm but which would add to the income if sold or fed to other classes of live stock.

The seven farms in Group 1 of Table 6, which worked the most crop acres per horse (24.6 acres) during the seven-year period, earned 6.97 percent on the total farm investment; while the seven farms in Group 2, which worked the fewest crop acres per horse (18.6 acres), earned 5.28 percent on the investment. This is a difference in favor of Group 1 of 1.69 percent in the rate earned on the investment and of six acres in crop area worked per horse. The difference in the labor and management wage on the two groups of farms was \$977 in favor of the farms working the most crop acres per horse.

The reader is warned that Table 6 cannot be used to judge the relative merits of horse and tractor power. The fact that both horses and tractors were used on these farms, and that tractors were added, in several instances, during the seven-year period, prevents making as satisfactory an analysis of the use of horse labor as can be made in case of the other factors. On farms using only horses, or on farms where tractors of comparable size are used together with horses, the crop acres worked per horse serve as a good measure of the efficient use of horse labor.

There is sufficient difference in the total earnings on the farms working the most crop acres per horse and those working the fewest to indicate the importance of the efficient use of horse labor. The importance of this factor is also indicated by the fact that the seven farms earning the highest rate on the total farm investment worked 20.5 acres per horse and had tractors only 12.2 percent of the time, while the seven farms which earned the lowest rate on the investment worked 20.4 acres of crops per horse and in addition had tractors 57.1 percent of the time, indicating that considerable more power was provided on the farms earning the lowest rate on the investment.

A study of the results on some of the individual farms also shows the importance of working a good acreage of crops per horse. For example, Farm 5 worked the largest number of crop acres per horse of any farm that did not have a tractor, and was able to secure crop yields 29.7 percent higher than the average county yields; while on Farm 19, which worked the lowest number of crop acres per horse and did not have a tractor, the yields were only 3.1 percent higher than the average county yields. A study of the other farms indicates

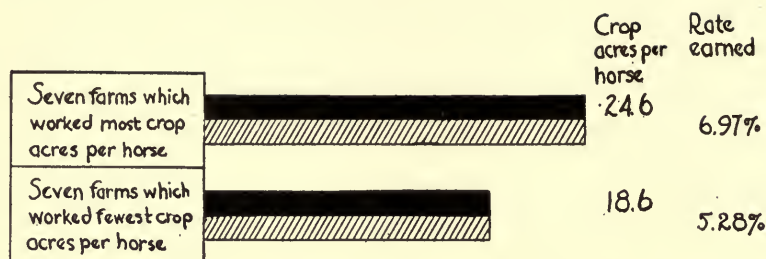


FIG. 6.—A LOW NUMBER OF CROP ACRES WORKED PER HORSE USUALLY MEANS HIGH OPERATING COSTS

That the cost of horse labor is one of the more important costs in farm operations and frequently exceeds the cost of man labor in crop production is not generally realized. The difference in the labor and management wage on the two above groups of farms was \$977 in favor of the first group, as shown in Table 6.

that many farmers making efficient use of horse labor have had crop yields well above the average of the nineteen farms. (Table 9, lines 40 and 50.)

It is not generally appreciated by farmers that horse labor is one of the more important costs in farm operations. Cost accounting investigations show that the average cost of keeping a farm work horse

TABLE 6.—THE SEVEN FARMS WORKING THE MOST CROP ACRES PER HORSE COMPARED WITH THE SEVEN FARMS WORKING THE FEWEST

	(GROUP 1) Average of 7 farms which worked most crop acres per horse	(GROUP 2) Average of 7 farms which worked fewest crop acres per horse	Difference between the two groups
Rate earned on investment.....	6.97%	5.28%	1.69%
Labor and management wage...	\$1,626.00	\$649.00	\$977.00
1. Crop index.....	120.9	125.9	-5.0
2. Returns from \$100 invested in productive live stock.....	\$ 115.57	\$ 89.00	\$ 26.57
Percent of income from all live stock.....	45.2%	47.0%	-1.8%
3. Crop acres worked per man...	85.7	78.5	7.2
4. Crop acres worked per horse..	24.6	18.6	6.0
Percent of years with tractors.	46.9%	38.7%	8.2%
5. Expense per \$100 gross income.	\$ 40.24	\$ 44.09	\$-3.85
Investment per acre.....	\$ 278.00	\$278.00	.....
Net income per acre.....	\$ 19.39	\$ 14.84	\$ 4.55
Size of farm, acres.....	208.1	203.3	4.8

NOTE.—Group 1 includes Farms 15, 11, 1, 13, 5, 3, and 6; Group 2 includes Farms 14, 18, 10, 17, 19, 12, and 2. In order to make the two groups of farms comparable in regard to the above factor, the seven farms in each group include four farms on which tractors were used for four to seven years and three farms on which no tractors were used.

in central Illinois is about \$100 a year under present conditions. When a horse works from 16 to 25 acres of crops a year and a large part of the horse labor is spent on crop production, it is apparent that the cost of horse labor is an important item in growing crops. Hence, while too large an acreage worked per horse leads to poor quality of work, the efficient use of horse labor is essential to the most profitable farming. A large acreage worked efficiently per horse is dependent upon the same factors which were mentioned as affecting the number of crop acres that may be efficiently worked per man; namely, a good rotation of crops; the feeding off of crops to live stock; the proper combination of live-stock and crop production; utilizing rainy days and slack periods for movable work; and a good arrangement of fields and farmstead.

IMPORTANCE OF THRIFT IN FARMING

A comparison of expenses with receipts serves as a means of emphasizing the importance of "thrift" in farming. It is impossible to determine the actual cost of producing farm products from the records from which these data were taken. However, the total of certain selected items of expense (including depreciation and repairs on buildings, machinery, and other equipment, hired labor, family labor, value of operator's labor, machine hire, taxes, and miscellaneous minor expenses) for each \$100 of income, provides a means of emphasizing the importance of the relation between farm expenses and receipts. This has not been done adequately in any of the comparisons previously made.

The seven farms which had the lowest expense for each \$100 of gross income (\$31.64) during the seven-year period, earned 8.61 percent on the total farm investment, while the seven farms with the highest expense for each \$100 of gross income (\$52.65) earned 4.35 percent. This is a difference of 4.26 percent in the rate earned on the investment and of \$21.01 in expense in favor of the farms with the lowest expense. The labor and management wage on the two groups of farms was \$2,068 in favor of the farms with the lowest expense.

A further study of Table 7 shows that the seven farms which had the lowest expense for each \$100 of gross income had better crop yields, larger returns for each \$100 invested in productive live stock, and showed more efficient use of man labor, than did the seven farms with the most expense for each \$100 of gross income. The expense per \$100 gross income serves as an efficiency measure of the management of the entire farm, since the excellence of management is reflected both in the gross income and in the expense of operation. Of the seven farms with the least expense per \$100 gross

income, six were among the seven best paying of the nineteen farms, as shown in Table 2. Table 2 further shows that the seven farms which earned the highest rate on the total farm investment had an expense of only \$31.98 for each \$100 of gross income, while the seven farms which earned the lowest rate on the investment had an expense of \$52.68 for each \$100 of gross income.

The importance of keeping down expenses in proportion to income is shown again in the study of the records of individual farms. On Farm 2 (Table 9), which returned the highest labor and management wage, an average of only \$24.90 was spent for every \$100 received during the seven-year period; while on Farm 19, which earned the lowest rate on the total investment and had the lowest labor and management wage, \$69.23 was spent for every \$100 of gross income. Farm 3 also is a good illustration of a farm that returned a high rate on the investment and had a good labor and management wage because expenses were kept low. This farm ranked third among the nineteen farms in the rate earned on the investment even tho it ranked sixth in the returns from \$100 invested in productive live stock, seventeenth in crop yields, seventh in crop acres worked per man, and ninth in crop acres worked per horse.

In Table 11 is shown a study of a large number of farms in three different counties of the state in 1922. Line 37 shows that the farms which earned the best rate on the investment invariably had much lower expense for each \$100 of gross income than did the farms which earned the lowest rate on the investment.

Success in keeping expenses low in proportion to gross income is dependent upon doing the many things which enter into the organization and operation of the farm to make it an efficient productive unit. Some expenses which will bear special attention and means of reducing them include: feed costs, which can be reduced on many farms

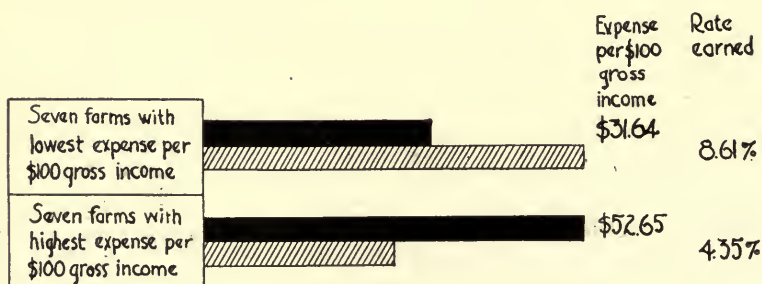


FIG. 7.—WISE EXPENDITURES HELP INSURE PROFITABLE FARMING

The seven farms with the lowest expense for each \$100 of gross income earned 4.26 percent more on the total farm investment than the seven farms with the highest expense. The labor and management wage was \$2,068 greater per farm in the low expense group, as shown in Table 7.

TABLE 7.—THE SEVEN FARMS HAVING LOWEST EXPENSE PER \$100 GROSS INCOME COMPARED WITH THE SEVEN FARMS HAVING THE HIGHEST EXPENSE

	(GROUP 1) Average of 7 farms with lowest expense per \$100 gross income	(GROUP 2) Average of 7 farms with highest expense per \$100 gross income	Difference between the two groups
Rate earned on investment.....	8.61%	4.35%	4.26%
Labor and management wage ...	\$2,166.00	\$ 98.00	\$2,068.00
1. Crop index.....	128.6	121.1	7.5
2. Returns from \$100 invested in productive live stock.....	\$ 127.50	\$ 78.19	\$ 49.31
Percent of income from all live stock.....	39.4%	46.5%	-7.1%
3. Crop acres worked per man...	87.0	74.8	12.2
4. Crop acres worked per horse...	19.6	20.0	-.4
Percent of years with tractors.	12.2%	49.0%	-36.8%
5. Expense per \$100 gross income	\$ 31.64	\$ 52.65	\$ -21.01
Gross income, per acre.....	\$ 34.11	\$ 25.91	\$ 8.20
Investment per acre.....	\$ 271.00	\$282.00	\$ -11.00
Expense per acre.....	\$ 10.79	\$ 13.64	\$ -2.85
Net income per acre.....	\$ 33.32	\$ 12.27	\$ 11.05
Size of farm acres.....	170.6	210.0	-39.4

NOTE.—Group 1 includes Farms 2, 1, 3, 4, 6, 7, and 9; Group 2 includes Farms 19, 18, 15, 16, 17, 14, and 12.

by keeping the number of work horses at the minimum required for good work; costs of harvesting, storing, and marketing crops, which can frequently be avoided by pasturing off crops with live stock; the cost of feeds required for the balancing of rations, most of which can be most economically produced on the farm; needless expenditures for high-priced commercial feeds, which can be avoided by properly combining feeds grown on the farm; operation costs, which can be reduced by the careful selection of machinery. In analyzing individual farms, a study could well be made of such separate items of expense as labor and machinery, or equipment, for every \$100 of gross income. Such a study would help to locate expenses which were higher than necessary for the system of farming practiced.

WELL-BALANCED FARMS ARE THE MOST PROFITABLE

The most profitable farms are well-balanced farms which do reasonably well along most lines. This fact is well illustrated in Fig. 8 and Table 8, which show the relative profitableness of the nineteen farms when grouped according to the number of important factors in which each farm was above the average of all nineteen farms. This com-

parison includes each of the five factors—crop yields, returns per \$100 invested in productive live stock, crop acres worked per man, crop acres worked per horse, and expense per \$100 gross income.

Of the five farms which were above the average in four factors, one was above the average in all five factors. As shown in Table 8, these farms earned an average annual rate for the seven-year period of 9.31 percent on the total investment; or expressed in terms of labor and management wage, they returned an average of \$2,465 annually to their operators.

The three farms which were above the average in three factors earned 6.63 percent annually on the investment, or a labor and management wage of \$1,568.

The six farms which were above the average in two factors earned 5.79 percent on the investment, or a labor and management wage of \$965.

The five farms which were above the average in only one factor, or failed to be above the average in any of the five factors, earned 4.03 percent on the investment, or lacked an average of \$65 in earning any labor and management wage.

A further study of Table 8 shows that the five farms in the first group were better than any of the other groups in all five factors analyzed, except in crop acres worked per horse. While the farms in the third group had nearly as high yields, their operators were much less efficient in the use of man and horse labor and expenses were much higher in proportion to income. The best group of farms far

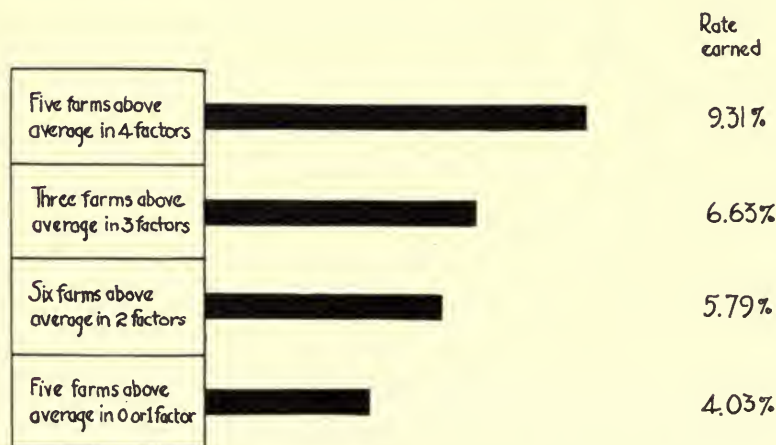


FIG. 8.—HOW FARM PROFITS ARE AFFECTED BY THE NUMBER OF FACTORS IN WHICH A FARM EXCELS

The farms in the first group returned a labor and management wage of \$2,465 yearly to their operators. Those in the last group lacked \$65 of paying any labor and management wage.

exceeded each of the other three groups in the returns on the money invested in productive live stock, and a much larger part of the total income of this group came from live stock. In other words the men who were most successful with live stock increased the size of their business by increasing the size of the live-stock enterprises. While the farms of the first group also worked the most crop acres per man of any group, they did not work as many crop acres per horse as the second group. However, they apparently made more efficient use of their horse labor, since they worked 21.5 acres per horse and used tractors only 17.3 percent of the time while the second group worked 23.2 acres but used tractors 33.3 percent of the time.

A study of the size of the farms as related to income shows that the acreage in the farms was not an important factor affecting earnings. The first group of farms averaged smaller in size than any of the other groups, while the largest-sized farms found in any group were found in the second group. Many studies made of the effect of the size of the farm on farm earnings show that with a certain type of farming there are certain limits to the acreage that can be operated

TABLE 8.—THE NINETEEN FARMS GROUPED ACCORDING TO THE NUMBER OF FACTORS IN WHICH EACH FARM WAS ABOVE THE AVERAGE OF THE NINETEEN FARMS

	(GROUP 1) Farms above average in 4 factors	(GROUP 2) Farms above average in 3 factors	(GROUP 3) Farms above average in 2 factors	(GROUP 4) Farms above average in none or one factor
Number of farms	5	3	6	5
Rate earned on investment	9.31%	6.63%	5.79%	4.03%
Labor and management wage	\$2,465.00	\$1,568.00	\$965.00	\$-65.00
1. Crop index	125.7	119.9	123.4	123.2
2. Returns from \$100 invested in productive live stock	\$ 149.55	\$ 121.66	\$ 83.79	\$ 69.46
Percent of income from all live stock	53.1%	46.7%	32.6%	43.8%
3. Crop acres worked per man	92.1	87.3	83.6	72.1
4. Crop acres worked per horse	21.5	23.2	21.3	17.9
Percent of years with tractor	17.3%	33.3%	50.0%	37.1%
5. Expense per \$100 gross income	\$ 30.48	\$ 39.68	\$ 44.77	\$ 51.88
Investment per acre	\$ 275.00	\$ 288.00	\$275.00	\$ 279.00
Net income per acre	\$ 25.60	\$ 19.06	\$ 15.90	\$ 11.20
Size of farm, acres	166.1	237.1	215.6	199.9

NOTE.—Group 1 includes Farms 1, 2, 3, 5, 6; Group 2, Farms 4, 8, 11; Group 3, Farms 7, 9, 10, 13, 15, 16; Group 4, Farms 12, 14, 17, 18, 19.

economically. Such a study made in Illinois indicates that all the farms included in this study were within size limits which would permit efficient operation. It is significant to note that all five farms making up the first group were family-sized farms employing extra labor only during rush seasons. It will be noted from Table 9 that the smallest of the nineteen farms contained 131.4 acres and the largest 360 acres. In this discussion, size of business and size of farm should not be confused. As shown by the gross income, net income, percentage of returns from live stock, and other factors, some farmers are conducting a much larger business than others whose farms are of equal area. The relative success of these nineteen farms was evidently dependent upon the ability of the managers to organize their farms for efficient production, rather than upon the area in the farms. As previously noted, some of the more successful live-stock men increased the size of their farm business by producing a larger amount of live stock. Because of their superior ability in handling live stock, this activity increased their net returns. The natural condition of the soil and the size of the farms would have permitted a similar type of organization on all the farms.

Where a feed record is available, one of the most satisfactory measures of live-stock efficiency is the return from each one hundred dollars' worth of feed fed. The keeping of a feed record is the next logical step in farm accounting after the keeping of a financial record of the entire farm business. Since feed makes up 45 to 85 percent of the cost of producing different classes of live stock and live-stock products, it is important that a man know whether or not he is getting good returns on the feed used by live stock. To some extent the returns per \$100 invested in productive live stock are a measure of feeding efficiency when animals of comparable kind and quality are used. Under such conditions, large returns per \$100 invested in live stock are a good indication that the live stock is making good use of its feed.

From the facts gathered in this study it was not possible to ascertain, in any complete way, the effect that variations in the prices received for the produce of the farms had on their relative earnings. It is true that there were instances of considerable variation in the prices received by different operators during the same year for products of similar grade. Such instances, however, were the exception rather than the rule; and it should be remembered also that the men were all farming under similar conditions in the same community, thus having like opportunity in marketing. Also, since these data represent the average results of a seven-year period, occasional unfortunate marketing should not greatly affect the average results over the full period.

A record of the produce furnished by the farm toward the living of the farm family would also have been of advantage in this study. The value of such produce per person varies widely on different farms, as is shown in cost accounting studies. In comparing the incomes of different farms, the value of the farm produce used by the family should be taken into account.

In making these suggestions as to ways of analyzing the farm business, it is recognized that practices that are best for one farm may not be the best for another. The analysis serves rather to suggest principles that apply to all farms. The individual farmer may well study the principles and then adopt those practices that are best suited to his own peculiar conditions.

The same general principles, or factors, which account for the success or lack of success on these farms, apply also to farms in any section of the state. However, the standards of accomplishment, such as the yields of crops, the land handled per man and per horse, and the total expenses in relation to gross income, will vary with the kind of soil and type of farming followed in different sections of the state.

A study of the data presented in this bulletin shows that no farm excels in all points of good management. It also shows that the farm which does fairly well in most of the factors discussed is more likely to prove profitable than the farm that excels in one or two factors and does poorly in others. It is of interest to note that the five farms that were above the average in four or all of the five factors analyzed, made 5.28 percent more annually on the total investment than the five farms which failed to be above the average in more than one factor. The difference in the yearly labor and management wage was \$2,530. These wide differences in farm earnings between the better balanced and the less well-balanced of the nineteen farms, amounting to more than \$2,500 per year as an average of the seven year period, explain why some farmers are getting ahead much more rapidly than others.

In conclusion, it may be noted that even the least well balanced of these nineteen farms had much better earnings than had many other farms that did not keep records throughout the seven-year period but on which records were secured during the last year or two of the study. If the men on these farms could make a living from them, it is evident that the better farmers would, in the course of a twenty-year period, make enough money to purchase and fully equip a large farm in the best part of the state. Or from another point of view, the increased earnings on the better managed farms would make possible a better standard of living—that is, more modern conveniences in the home, better education for the children, and other things which help to make life more worth while.

TABLE 9.—SUMMARIZED FINANCIAL RECORD OF EACH OF THE NINETEEN WOODFORD COUNTY
FARMS ON WHICH THE SEVEN-YEAR RECORDS WERE KEPT

Each item is an average for the seven-year period, 1916 to 1922, inclusive

	Farm 1	Farm 2	Farm 3	Farm 4	Farm 5	Farm 6	Farm 7	Farm 8	Farm 9	Farm 10
1 Size of farm, acres.....	162.1	160.0	195.6	131.4	165.7	147.1	177.4	240.0	220.7	264.3
2 Value of land per acre.....	\$ 125	\$ 250	\$ 225	\$ 225	\$ 225	\$ 225	\$ 225	\$ 225	\$ 200	\$ 209
3 Capital invested, total.....	\$27383	\$52718	\$52747	\$37775	\$51616	\$43981	\$50856	\$59852	\$58454	\$68263
4 Land.....	\$20268	\$40000	\$44036	\$29572	\$37286	\$33108	\$39922	\$54000	\$44143	\$55179
5 Buildings.....	\$1563	\$3598	\$2374	\$1702	\$5537	\$5011	\$2401	\$3498	\$3986	\$3578
6 Machinery and equipment.....	\$1652	\$1435	\$592	\$1336	\$1536	\$845	\$1010	\$1880	\$1190	\$1957
7 Feed, grain, and supplies.....	\$1569	\$3088	\$8552	\$2468	\$2425	\$3183	\$3519	\$5544	\$5780	\$4658
8 Total live stock.....	\$2351	\$4597	\$1893	\$2697	\$4812	\$1734	\$3804	\$4930	\$3355	\$2891
9 Horses.....	\$94	\$1088	\$1205	\$336	\$645	\$761	\$1366	\$1482	\$1704	\$1296
10 Cattle.....	\$711	\$307	\$322	\$142	\$755	\$410	\$1750	\$2297	\$954	\$1157
11 Sheep.....	\$65	\$8	\$8	\$127	\$1774	..	\$530	\$75	\$30	...
12 Swine.....	\$459	\$267	\$8	\$1393	\$1563	\$457	\$530	\$878	\$519	\$344
13 Poultry.....	\$132	\$119	\$91	\$99	\$75	\$106	\$158	\$198	\$148	\$94
14 Receipts and net increases, total.....	\$5083	\$7608	\$6416	\$4694	\$6490	\$5023	\$5713	\$7694	\$6244	\$6840
15 Feed, grain and supplies.....	\$2670	\$1241	\$4838	\$2189	\$308	\$3870	\$3522	\$4418	\$5087	\$5671
16 Miscellaneous.....	\$423	\$20	\$48	\$5	\$417	\$58	\$101	\$133	\$181	\$97
17 Livestock, total.....	\$1960	\$6338	\$1092	\$2500	\$5765	\$1095	\$2090	\$3143	\$976	\$1072
18 Horses.....	\$102	\$7	\$160	\$46	\$17	\$49	\$55	\$3	\$22	\$-50
19 Cattle.....	\$228	\$41	\$243	\$243	\$317	\$260	\$444	\$1606	\$146	\$325
20 Sheep.....	\$2	\$2	\$2	\$35	\$1626	\$709	\$1235	\$12	\$12	\$552
21 Swine.....	\$1320	\$6157	\$608	\$2261	\$3513	\$169	\$339	\$1119	\$628	\$241
22 Poultry.....	\$277	\$99	\$31	\$184	\$201	\$387	\$387	\$387	\$160	\$241
23 Miscellaneous.....	\$35	\$34	\$2	\$20	\$91	\$6	\$17	\$16	\$8	\$4
24 Expenses and net decreases.....	\$897	\$1319	\$1219	\$1202	\$2132	\$1318	\$1631	\$2530	\$1858	\$2213
25 Farm improvements.....	\$117	\$166	\$78	\$128	\$223	\$191	\$125	\$257	\$160	\$265
26 Machinery and equipment.....	\$244	\$199	\$176	\$238	\$367	\$163	\$262	\$387	\$257	\$445
27 Cash expenses.....	\$496	\$954	\$965	\$816	\$1522	\$964	\$1244	\$1886	\$1441	\$1503

NOTE.—The lower value for Farm 1 is due to the fact that the soil is of the yellow-gray silt loam type. Also, about one-sixth of the area in this farm is untillable, while many of these farms are made up entirely of plow land. The value given represents the selling value of the land as compared with the other farms.

TABLE 9—Continued

	Farm 1	Farm 2	Farm 3	Farm 4	Farm 5	Farm 6	Farm 7	Farm 8	Farm 9	Farm 10
28 Receipts less expenses.....	\$4196	\$6289	\$5197	\$3492	\$4358	\$3705	\$4082	\$5164	\$4386	\$4627
29 Operator's labor.....	\$451	\$576	\$500	\$443	\$474	\$478	\$509	\$479	\$533	\$451
30 Net income from investment.....	\$3745	\$5713	\$4697	\$3049	\$3884	\$3227	\$3573	\$4665	\$3853	\$4176
31 Rate earned on investment.....	13.68%	10.84%	8.90%	8.07%	7.53%	7.35%	7.05%	6.71%	6.59%	6.12%
32 Labor and management wage.....	\$2825	\$3653	\$2559	\$1604	\$1778	\$1511	\$1548	\$1672	\$1464	\$1215
33 Investment per acre.....	\$169	\$329	\$270	\$287	\$311	\$298	\$285	\$291	\$265	\$258
34 Gross receipts per acre.....	\$31.17	\$47.54	\$32.79	\$35.72	\$39.17	\$34.14	\$32.20	\$32.06	\$28.26	\$25.88
35 Total expense per acre.....	\$8.08	\$11.85	\$8.79	\$12.52	\$15.73	\$12.21	\$12.07	\$12.54	\$10.40	\$10.07
36 Net receipts per acre.....	\$23.09	\$35.69	\$24.00	\$23.45	\$23.45	\$21.93	\$20.13	\$19.52	\$17.86	\$15.81
37 Expense per \$100 gross income.....	\$25.88	\$24.90	\$26.79	\$35.05	\$40.15	\$35.75	\$37.45	\$39.10	\$38.25	\$38.95
38 Man labor, cost per acre based on total acres.....	\$3.69	\$5.12	\$4.28	\$5.13	\$4.38	\$4.93	\$4.83	\$5.62	\$5.62	\$4.44
39 Crop acres worked per man.....	102.1	99.6	87.7	83.9	97.8	77.7	80.6	85.2	83.6	96.8
40 Crop acres worked per horse.....	25.8	17.6	21.5	18.2	25.9	18.9	18.2	23.1	18.9	22.4
41 Extra tractor was used.....	6	...	...	...	...	...	...	5	...	6
42 Percent of land in crops.....	81.9	80.0	89.7	78.9	82.6	79.6	85.2	85.5	86.9	76.4
43 Area in crops, total.....	132.9	128.0	175.5	103.9	136.9	117.3	151.3	205.0	192.0	201.9
44 Corn.....	38.7	76.6	83.3	66.7	77.3	67.9	87.7	96.1	85.9	95.5
45 Oats.....	42.4	33.6	77.1	33.5	25.9	43.1	55.7	85.1	78.3	81.1
46 Wheat.....	29.1	...	1.3	3.5	...	3.0	...	...	10.4	1.6
47 Yields—Corn.....	47.2	57.4	46.4	53.2	51.3	50.3	53.5	51.0	45.7	51.9
48 Oats.....	50.3	63.5	45.5	52.2	52.7	53.5	52.2	52.6	54.6	45.2
49 Wheat.....	22.5	...	24.8	19.6	...	25.0	...	...	22.5	14.5
50 Crop index.....	117.1	144.6	114.5	127.1	129.7	128.7	137.8	116.6	123.7	122.7
51 Percent of receipts from all live stock.....	38.78%	83.30%	17.02%	53.26%	88.83%	21.80%	34.83%	40.85%	15.65%	15.67%
52 Returns from \$100 invested in productive live stock.....	\$135.73	\$180.43	\$135.27	\$144.64	\$138.07	\$117.43	\$83.43	\$90.87	\$57.74	\$70.27
53 Returns from \$100 invested in horses.....	\$10.58	...	\$13.26	-\$4.91	\$2.63	-\$6.45	\$4.03	\$.20	\$1.29	-\$3.85
54 Returns from \$100 invested in cattle.....	\$32.07	\$13.68	\$75.47	\$32.39	\$41.99	\$63.41	\$25.37	\$69.89	\$15.31	\$28.09
55 Returns from \$100 invested in sheep.....	-\$4.61	...	-\$25.00	\$27.56	\$91.71	...	...	\$16.00	\$40.00	...
56 Returns from \$100 invested in swine.....	\$286.92	\$199.74	\$227.71	\$162.43	\$224.18	\$155.14	\$233.02	\$127.33	\$121.00	\$160.76
57 Returns from \$100 invested in poultry.....	\$209.85	\$83.19	\$89.01	\$185.86	\$268.00	\$159.43	\$214.56	\$195.45	\$108.10	\$258.38

TABLE 9.—*Continued*—SUMMARIZED FINANCIAL RECORD OF EACH OF THE NINETEEN WOODFORD COUNTY FARMS ON WHICH THE SEVEN-YEAR RECORDS WERE KEPT

Each item is an average for the seven-year period, 1916 to 1922, inclusive

	Farm 11	Farm 12	Farm 13	Farm 14	Farm 15	Farm 16	Farm 17	Farm 18	Farm 19	Average of all 19 Farms
1 Size of farm, acres.....	340.0	152.9	206.1	160.0	240.0	184.9	360.0	178.0	148.4	201.8
2 Value of land, per acre.....	\$ 225	\$ 225	\$ 225	\$ 200	\$ 225	\$ 203	\$ 198	\$ 225	\$ 225	\$ 215
3 Capital invested, total.....	\$96928	\$44373	\$62037	\$41747	\$70179	\$45645	\$96021	\$54274	\$42294	\$56150
4 Land.....	\$76500	\$34393	\$16380	\$32000	\$54000	\$37501	\$71433	\$40052	\$33396	\$43399
5 Buildings.....	\$ 6492	\$ 3667	\$ 4959	\$ 2930	\$ 3939	\$ 2990	\$ 7039	\$ 3919	\$ 2215	\$ 3769
6 Machinery and equipment.....	\$ 2494	\$ 1968	\$ 2868	\$ 1493	\$ 2894	\$ 1203	\$ 2375	\$ 2654	\$ 577	\$ 1613
7 Feed, grain, and supplies.....	\$ 6555	\$ 2561	\$ 3278	\$ 3496	\$ 4002	\$ 2368	\$ 6902	\$ 2882	\$ 2480	\$ 3654
8 Total live stock.....	\$ 4837	\$ 2184	\$ 4532	\$ 1828	\$ 5344	\$ 2193	\$ 8372	\$ 5867	\$ 3617	\$ 3795
9 Horses.....	\$ 1288	\$ 1130	\$ 1131	\$ 909	\$ 1039	\$ 1185	\$ 1810	\$ 1752	\$ 1419	\$ 1217
10 Cattle.....	\$ 2465	\$ 871	\$ 1027	\$ 681	\$ 3205	\$ 698	\$ 4840	\$ 1540	\$ 1043	\$ 1353
11 Sheep.....			\$ 36				\$ 293	\$ 113	\$ 50	\$ 136
12 Swine.....	\$ 1067	\$ 350	\$ 2246	\$ 152	\$ 945	\$ 321	\$ 1297	\$ 1927	\$ 427	\$ 969
13 Poultry.....	\$ 67	\$ 126	\$ 102	\$ 86	\$ 155	\$ 75	\$ 132	\$ 235	\$ 78	\$ 120
14 Receipts and net increases, total.....	\$10080	\$ 4504	\$ 6408	\$ 3676	\$ 7797	\$ 4233	\$ 7737	\$ 5076	\$ 3347	\$ 5981
15 Feed, grain and supplies.....	\$ 5198	\$ 3315	\$ 3374	\$ 3163	\$ 3640	\$ 2833	\$ 3180	\$ 1385	\$ 1388	\$ 3226
16 Miscellaneous.....	\$ 33	\$ 55	\$ 333	\$ 16	\$ 186	\$ 57	\$ 43	\$ 525	\$ 56	\$ 170
17 Live stock, total.....	\$ 4859	\$ 1134	\$ 2701	\$ 497	\$ 3971	\$ 1343	\$ 4514	\$ 3166	\$ 903	\$ 2585
18 Horses.....	\$ -172	\$ 5	\$ -14	\$ -62	\$ 4	\$ 65	\$ 28	\$ -190	\$ 95	\$ -1
19 Cattle.....	\$ 2249	\$ 499	\$ 511	\$ 231	\$ 1902	\$ 342	\$ 1931	\$ 989	\$ 104	\$ 653
20 Sheep.....		\$ 8	\$ 19			\$ 3	\$ 130	\$ 9	\$ -16	\$ 97
21 Swine.....	\$ 2601	\$ 334	\$ 1825	\$ 196	\$ 1393	\$ 868	\$ 2135	\$ 2091	\$ 598	\$ 1587
22 Poultry.....	\$ 180	\$ 284	\$ 314	\$ 124	\$ 649	\$ 47	\$ 225	\$ 252	\$ 224	\$ 224
23 Miscellaneous.....	\$ 1	\$ 4	\$ 46	\$ 8	\$ 23	\$ 18	\$ 65	\$ 15	\$ 60	\$ 25
24 Expenses and net decreases.....	\$ 3815	\$ 1454	\$ 2641	\$ 1039	\$ 3570	\$ 1671	\$ 3337	\$ 2755	\$ 1104	\$ 2008
25 Farm improvements.....	\$ 472	\$ 150	\$ 235	\$ 161	\$ 304	\$ 131	\$ 392	\$ 590	\$ 120	\$ 320
26 Machinery and equipment.....	\$ 799	\$ 250	\$ 796	\$ 260	\$ 1155	\$ 399	\$ 983	\$ 577	\$ 195	\$ 431
27 Cash expenses.....	\$ 2544	\$ 1054	\$ 1610	\$ 618	\$ 2211	\$ 1141	\$ 1992	\$ 1688	\$ 789	\$ 1357

TABLE 9.—*Concluded*

	Farm 11	Farm 12	Farm 13	Farm 14	Farm 15	Farm 16	Farm 17	Farm 18	Farm 19	Average of all 19 Farms
28 Receipts less expenses.....	\$ 6275	\$ 3050	\$ 3767	\$ 2637	\$ 4127	\$ 2532	\$ 4370	\$ 2311	\$ 1213	\$ 3973
29 Operator's labor.....	449	493	517	583	583	471	531	314	531	483
30 Net income from investment.....	\$ 6528	\$ 2557	\$ 3250	\$ 2154	\$ 3618	\$ 2091	\$ 3808	\$ 1997	\$ 722	\$ 3489
31 Rate earned on investment.....	6.01%	5.76%	5.24%	5.18%	5.15%	4.58%	3.98%	3.98%	71%	6.21%
32 Labor and management wage.....	\$ 1430	\$ 830	\$ 695	\$ 553	\$ 618	\$ 280	\$ 433	\$ 403	\$ 872	\$ 1166
33 Investment per acre.....	285	290	301	261	282	247	267	305	289	278
34 Gross receipts per acre.....	29.67	29.46	31.09	22.98	32.49	22.89	21.48	28.54	15.82	29.63
35 Total expense per acre.....	12.54	12.75	13.32	9.51	17.41	11.38	10.90	17.31	10.95	12.26
36 Net receipts per acre.....	17.13	16.71	15.77	13.47	15.08	11.51	10.58	11.23	4.87	17.37
37 Expense per \$100 gross income.....	42.25	43.22	49.23	41.40	53.60	50.84	50.78	60.65	69.23	41.38
38 Man labor, cost per acre based on total acres.....	5.02	6.04	5.34	3.91	6.08	3.95	4.09	6.85	4.45	4.97
39 Crop acres worked per man.....	90.0	53.1	78.4	80.9	73.9	92.4	82.9	68.4	86.1	83.0
40 Crop acres worked per horse.....	26.1	16.1	24.4	17.7	30.0	16.8	23.1	18.0	13.9	20.8
41 Years tractor was used.....	5	.....	5	4	7	3	5	4	.....	2.63
42 Percent of land in crops.....	81.2	87.0	83.4	65.7	78.5	76.4	58.7	85.1	79.6	79.0
43 Acres in crops, total.....	275.9	133.0	171.9	105.1	189.4	141.3	211.4	151.4	107.7	159.5
44 Corn.....	122.3	76.3	79.0	45.7	73.9	65.0	100.0	60.6	47.0	74.1
45 Oats.....	79.7	47.6	68.7	35.9	79.4	56.7	65.3	50.9	32.3	56.6
46 Wheat.....	43.9	.....	4.3	1.4	2.9	7.5	7.7	8.6	1.7	6.8
47 Yields—Corn.....	49.6	50.7	53.6	52.7	50.2	50.4	51.1	54.8	40.6	51.1
48 Oats.....	40.7	38.6	46.7	47.1	44.3	39.2	40.9	54.3	40.5	47.1
49 Wheat.....	27.7	.....	19.7	35.9	23.4	24.8	18.6	30.0	17.6	25.5
50 Crop index.....	119.7	112.9	124.1	129.9	117.4	117.2	128.5	138.5	103.1	123.2
51 Percent of receipts from all live stock.....	48.15%	25.18%	42.15%	13.52%	50.93%	31.72%	53.31%	62.37%	38.47%	43.22%
52 Returns from \$100 invested in productive live stock.....	\$ 139.76	\$ 83.32	\$ 79.82	\$ 60.81	\$ 92.16	\$ 126.74	\$ 67.85	\$ 87.97	\$ 36.89	\$ 100.83
53 Returns from \$100 invested in horses.....	\$ -13.35	\$.44	\$ -1.23	\$ -6.82	\$.38	\$ 5.48	\$ 1.54	\$ -10.84	\$ 6.89	\$.08
54 Returns from \$100 invested in cattle.....	\$ 91.31	\$ 57.28	\$ 49.75	\$ 33.92	\$ 59.35	\$ 57.19	\$ 39.89	\$ 64.17	\$ 6.33	\$ 48.33
55 Returns from \$100 invested in sheep.....	.....	\$ 114.29	\$ 52.78	.....	.....	\$ 21.43	\$ 44.37	\$ 7.96	\$ -32.00	\$ 71.32
56 Returns from \$100 invested in swine.....	\$ 243.77	\$ 95.43	\$ 81.70	\$ 128.95	\$ 147.51	\$ 270.09	\$ 164.53	\$ 108.46	\$ 140.65	\$ 166.00
57 Returns from \$100 invested in poultry.....	\$ 268.66	\$ 225.40	\$ 307.84	\$ 144.19	\$ 418.71	\$ 62.67	\$ 170.45	\$ 107.23	\$ 79.49	\$ 186.67

NOTE.—The allowance for operator's labor (line 29) represents the prevailing wage for labor during the years included in this study. In addition to this wage, the operator received such living for himself and family as the farm furnished. This living was not included as a part of the farm receipts.

In some instances where the operator was advanced in years or spent part of his time away from the farm, the value of his labor was reduced accordingly.

For full explanation of the terms *rate earned on investment* (line 31) and *labor and management wage* (line 32), see note on page 182.

TABLE 10.—RECORDS OF THE NINETEEN WOODFORD COUNTY FARMS, SUMMARIZED BY YEARS
Each item is a weighted average of the data for all nineteen farms for the year indicated at the top of the column

Average of all 19 farms for seven years										
		1916	1917	1918	1919	1920	1921	1922		
1	Size of farm.....	\$ 205.8	\$ 198.7	\$ 199.1	\$ 201.1	\$ 197.0	\$ 201.2	\$ 209.7		\$ 201.8
2	Value of land per acre.....	\$ 216	\$ 214	\$ 214	\$ 215	\$ 214	\$ 214	\$ 215		\$ 215
3	Capital invested, total.....	\$54020	\$52723	\$57587	\$59034	\$57624	\$55570	\$56490		\$56150
4	Land.....	\$44370	\$42636	\$42675	\$43149	\$42225	\$43172	\$45067		\$43329
5	Buildings.....	\$3679	\$3679	\$3784	\$3784	\$3822	\$3773	\$3864		\$3769
6	Machinery and equipment.....	\$ 958	\$1113	\$1444	\$1789	\$2132	\$2038	\$1819		\$1613
7	Feed, grain and supplies.....	\$2423	\$2108	\$5507	\$5372	\$4712	\$2929	\$2527		\$3654
8	Total live stock.....	\$2590	\$3187	\$4177	\$4940	\$4733	\$3658	\$3213		\$3785
9	Horses.....	1532	\$1541	\$1281	\$1236	\$1084	\$955	\$890		\$1217
10	Cattle.....	689	\$1019	\$1502	\$1839	\$1997	\$1400	\$1014		\$1353
11	Sheep.....	..	5	\$295	\$256	\$ 75	\$ 42	\$281		\$136
12	Swine.....	\$ 294	\$ 524	\$ 992	\$1481	\$1441	\$1105	\$ 878		\$ 959
13	Poultry.....	\$ 75	\$ 98	\$ 107	\$ 128	\$ 136	\$ 156	\$ 150		\$ 120
14	Receipts and net increases, total.....	\$5388	\$ 8765	\$ 7819	\$ 7669	\$ 3852	\$ 2866	\$ 5507		\$5981
15	Feed, grain and supplies.....	\$3526	\$5864	\$4284	\$4188	\$1185	\$808	\$ 2724		\$3226
16	Miscellaneous.....	131	\$110	\$217	\$196	\$125	\$187	\$ 170		\$ 170
17	Live stock, total.....	1731	\$2791	\$3318	\$3285	\$2542	\$1831	\$2596		\$2585
18	Horses.....	15	\$ 13	\$ 50	\$ 25	..	\$ -64	\$ -47		..
19	Cattle.....	530	\$723	\$908	\$973	\$ 521	\$ 302	\$ 616		\$ 653
20	Sheep.....	33	\$ 98	\$ 27	\$208	\$ -18	\$ 100	\$ 228		\$ 97
21	Swine.....	987	\$1778	\$2069	\$1798	\$1741	\$1210	\$1522		\$1587
22	Poultry.....	159	\$ 174	\$ 238	\$252	\$245	\$ 259	\$ 247		\$ 224
23	Miscellaneous.....	7	\$ 5	\$ 26	\$ 29	\$ 53	\$ 24	\$ 30		\$ 25
24	Expenses and net decreases.....	\$1229	\$1566	\$2013	\$1961	\$2499	\$2315	\$2343		\$2008
25	Farm improvements.....	129	\$ 190	\$ 194	\$ 175	\$ 284	\$ 285	\$ 282		\$ 220
26	Machinery and equipment.....	164	\$ 185	\$ 413	\$ 433	\$ 713	\$ 540	\$ 570		\$ 431
27	Cash expenses.....	\$ 936	\$1191	\$1406	\$1553	\$1502	\$1490	\$1491		\$1357

TABLE 10.—*Concluded*

	1916	1917	1918	1919	1920	1921	1922	Average of all 19 farms for seven years
28 Receipts less expenses.....	\$ 4199	\$ 7199	\$ 6806	\$ 5708	\$ 1353	\$ 551	\$ 3164	\$ 3973
29 Operator's labor.....	\$ 328	\$ 427	\$ 463	\$ 529	\$ 596	\$ 552	\$ 499	\$ 484
30 Net income from investment.....	\$ 3831	\$ 6772	\$ 6343	\$ 5179	\$ 757	—	\$ 2665	\$ 3489
31 Rate earned on investment.....	7.09%	12.84%	9.28%	8.77%	1.31%	0.00%	4.72%	6.21%
32 Labor and management wage.....	\$ 1468	\$ 4563	\$ 2927	\$ 2757	\$ 1526	\$ 2227	\$ 340	\$ 1166
33 Investment per acre.....	\$ 262	\$ 265	\$ 280	\$ 293	\$ 202	\$ 276	\$ 269	\$ 278
34 Gross receipts per acre.....	\$ 26.18	\$ 44.11	\$ 39.94	\$ 38.84	\$ 21.48	\$ 14.24	\$ 26.26	\$ 29.63
35 Total expense per acre.....	\$ 7.56	\$ 10.04	\$ 12.43	\$ 12.38	\$ 15.71	\$ 14.25	\$ 13.55	\$ 12.26
36 Net receipts per acre.....	\$ 18.62	\$ 34.07	\$ 27.51	\$ 26.46	\$ 5.77	—	\$ 12.71	\$ 17.37
37 Expense per \$100 gross income.....	\$ 28.89	\$ 22.74	\$ 31.12	\$ 31.87	\$ 73.14	\$ 100.00	\$ 51.61	\$ 41.38
38 Man labor, cost per acre based on total acres..	\$ 3.78	\$ 4.00	\$ 5.38	\$ 5.46	\$ 5.84	\$ 4.93	\$ 4.54	\$ 4.97
39 Crop acres worked per man.....	\$ 81.7	\$ 79.3	\$ 73.9	\$ 78.6	\$ 84.9	\$ 90.8	\$ 91.7	\$ 83.0
40 Crop acres worked per horse.....	\$ 20.3	\$ 19.0	\$ 17.7	\$ 21.1	\$ 21.3	\$ 21.7	\$ 22.5	\$ 20.8
41 Years tractor was used.....	1	3	7	9	10	18	18	2.83
42 Acres of land in crops.....	\$ 82.9	\$ 81.5	\$ 79.3	\$ 75.1	\$ 76.4	\$ 78.7	\$ 78.9	\$ 79.0
43 Percent of land in crops.....	\$ 170.7	\$ 162.1	\$ 157.9	\$ 151.1	\$ 150.7	\$ 153.4	\$ 163.5	\$ 159.5
44 Corn.....	\$ 81.8	\$ 76.7	\$ 69.1	\$ 64.3	\$ 76.3	\$ 76.6	\$ 73.5	\$ 74.1
45 Oats.....	\$ 64.8	\$ 57.7	\$ 54.3	\$ 47.5	\$ 49.2	\$ 62.0	\$ 57.4	\$ 56.6
46 Wheat.....	\$ 4.4	\$ 1.5	\$ 7.1	\$ 16.1	\$ 2.8	\$ 4.4	\$ 9.5	\$ 6.8
47 Yields—Corn.....	\$ 39.4	\$ 51.1	\$ 57.9	\$ 51.8	\$ 47.8	\$ 56.4	\$ 56.3	\$ 51.1
48 Oats.....	\$ 48.6	\$ 59.5	\$ 53.5	\$ 33.8	\$ 50.6	\$ 38.4	\$ 45.7	\$ 47.1
49 Wheat.....	\$ 16.6	\$ 20.0	\$ 35.4	\$ 23.8	\$ 21.7	\$ 23.1	\$ 27.8	\$ 25.5
50 Crop index.....	\$ 121.3	\$ 116.4	\$ 117.8	\$ 119.2	\$ 122.9	\$ 132.2	\$ 135.0	\$ 123.2
51 Percent of receipts from all live stock.....	32.1%	32.0%	41.7%	42.0%	60.3%	61.2%	47.1%	43.22%
52 Returns from \$100 invested in productive live stock.....	\$ 162.00	\$ 169.00	\$ 113.00	\$ 87.96	\$ 69.53	\$ 70.69	\$ 114.66	\$ 100.83
53 Returns from \$100 invested in horses.....	\$ 1.00	\$ 1.00	\$ 4.00	\$ 2.00	...	\$ 6.70	\$ —5.20	\$.08
54 Returns from \$100 invested in cattle.....	\$ 77.00	\$ 71.00	\$ 60.40	\$ 52.60	\$ 26.10	\$ 21.54	\$ 60.70	\$ 48.33
55 Returns from \$100 invested in sheep.....	...	...	\$ 9.07	\$ 81.40	\$ —23.93	\$ 238.60	\$ 81.00	\$ 71.32
56 Returns from \$100 invested in swine.....	\$ 335.00	\$ 341.00	\$ 208.63	\$ 121.41	\$ 120.82	\$ 109.81	\$ 177.11	\$ 166.00
57 Returns from \$100 invested in poultry.....	\$ 212.00	\$ 176.00	\$ 222.68	\$ 196.22	\$ 181.90	\$ 170.00	\$ 170.40	\$ 186.67

TABLE 11.—SUMMARY OF RECORDS FROM FARM ACCOUNTS KEPT IN THREE ILLINOIS COUNTIES IN 1922

			WABASH COUNTY			WOODFORD COUNTY			CLINTON COUNTY		
			County aver. 36 farms	8 high farms	10 low farms	County aver. 99 farms	10 high farms	10 low farms	County aver. 25 farms	6 high farms	6 low farms
1	Size of farm.....		170	149	147	233	184	219	163.9	151.2	161.0
2	Value of land per acre.....		\$ 112	\$ 125	\$ 100	\$ 236	\$ 246	\$ 288	\$ 98	\$ 80	\$ 102
3	Capital invested, total.....		\$24751	\$24120	\$18946	\$65870	\$55149	\$75462	\$19367	\$15899	\$17075
4	Land.....		\$18975	\$18706	\$14713	\$55099	\$45247	\$63296	\$15402	\$12054	\$13745
5	Buildings.....		\$ 2177	\$ 1891	\$ 1532	\$ 4046	\$ 3101	\$ 5980	\$ 1306	...	...
6	Machinery and equipment.....		\$ 848	\$ 963	\$ 543	\$ 1715	\$ 1715	\$ 1867	\$ 910	\$ 910	\$ 1048
7	Feed, grain and supplies.....		\$ 832	\$ 864	\$ 482	\$ 2182	\$ 1897	\$ 2066	\$ 827	\$ 857	\$ 731
8	Total live stock.....		\$ 1919	\$ 1696	\$ 1676	\$ 2758	\$ 3189	\$ 2263	\$ 1832	\$ 2078	\$ 1551
9	Horses.....		\$ 678	\$ 670	\$ 624	\$ 944	\$ 680	\$ 833	\$ 589	\$ 651	\$ 510
10	Cattle.....		\$ 712	\$ 447	\$ 724	\$ 872	\$ 893	\$ 654	\$ 892	\$ 1053	\$ 758
11	Sheep.....		\$ 30	\$ 24	...	\$ 85	\$ 483	\$ 18	2	...	...
12	Swine.....		\$ 341	\$ 353	\$ 181	\$ 716	\$ 1007	\$ 656	\$ 83	\$ 49	\$ 91
13	Poultry.....		\$ 158	\$ 202	\$ 143	\$ 141	\$ 126	\$ 92	\$ 266	\$ 325	\$ 192
14	Receipts and net increases, total.....		\$ 2338	\$ 3222	\$ 1274	\$ 4821	\$ 6283	\$ 2966	\$ 2187	\$ 2831	\$ 1424
15	Feed, grain and supplies.....		\$ 690	\$ 824	\$ 460	\$ 2501	\$ 2226	\$ 2156	\$ 572	\$ 618	\$ 562
16	Miscellaneous.....		\$ 118	\$ 324	\$ 28	\$ 162	\$ 293	\$ 40	\$ 116	\$ 49	\$ 73
17	Live stock, total.....		\$ 1521	\$ 2074	\$ 786	\$ 2098	\$ 3764	\$ 770	\$ 1499	\$ 2164	\$ 789
18	Horses.....		\$ 32	\$ 38	\$ 54	\$ 18	\$ 32	\$ 46	\$ 25	\$ 12	\$ 92
19	Cattle.....		\$ 501	\$ 846	\$ 250	\$ 531	\$ 728	\$ 88	\$ 904	\$ 1317	\$ 438
20	Sheep.....		\$ 34	\$ 26	...	\$ 75	\$ 410	\$ 4	\$ 1	...	...
21	Swine.....		\$ 672	\$ 757	\$ 294	\$ 1237	\$ 2365	\$ 589	\$ 114	\$ 164	\$ 78
22	Poultry.....		\$ 303	\$ 451	\$ 260	\$ 245	\$ 280	\$ 112	\$ 504	\$ 670	\$ 358
23	Miscellaneous.....		\$ 43	\$ 32	\$ 36	\$ 28	\$ 13	\$ 23	\$ 3	\$ 1	\$ 7
24	Expenses and net decreases, total.....		\$ 1213	\$ 1369	\$ 1042	\$ 2203	\$ 1888	\$ 2517	\$ 1078	\$ 1380	\$ 1335
25	Farm improvements.....		\$ 173	\$ 200	\$ 147	\$ 272	\$ 205	\$ 443	\$ 168	\$ 192	\$ 190
26	Machinery and equipment.....		\$ 230	\$ 222	\$ 253	\$ 503	\$ 346	\$ 511	\$ 272	\$ 234	\$ 245
27	Cash expenses.....		\$ 810	\$ 937	\$ 642	\$ 1428	\$ 1337	\$ 1563	\$ 638	\$ 954	\$ 900

TABLE 11.—*Concluded*

WABASH COUNTY				WOODFORD COUNTY				CLINTON COUNTY			
28	Receipts less expenses.....	\$ 1125	\$ 1863	\$ 232	\$ 2618	\$ 4395	\$ 449	\$ 1109	\$ 1451	\$ 89	
29	Operator's labor.....	465	409	498	525	505	534	782	555	438	
30	Net income from investment.....	660	1394	\$ -266	2093	3890	-85	327	896	\$ -349	
31	Rate earned on investment.....	2.6%	5.7%	-1.4%	3.1%	7.0%	-0.1%	1.7%	5.6%	-2.0%	
32	Labor and management wage.....	-112	657	-715	-675	163	-3324	141	656	-765	
33	Investment per acre.....	146	162	129	282	300	344	118	105	106	
34	Gross receipts per acre.....	13.75	21.62	8.66	20.69	34.20	13.52	13.34	18.72	8.84	
35	Total expense per acre.....	9.87	12.26	10.46	11.71	13.02	13.92	11.35	12.80	11.01	
36	Net receipts per acre.....	3.88	9.36	-1.80	8.98	21.18	-0.40	1.99	5.92	-2.17	
37	Expense per \$100 gross income.....	71.78	56.75	124.70	56.59	38.09	103.00	85.08	68.37	124.55	
38	Man labor, cost per acre based on total acres	\$5.00	\$6.33	\$5.35	\$4.10	\$4.98	\$4.45	\$6.40	\$7.69	\$6.45	
39	Crop acres worked per man.....	62.4	62.2	58.6	85.9	86.4	91.5	57.0	48.7	61.8	
40	Crop acres worked per horse.....	18.5	17.0	21.9	21.8	24.7	21.4	19.3	14.3	17.8	
41	Years tractor was used.....	33.3%	25.0%	25.0%	50.5%	60.0%	60.0%	4.0%	10.0%	0.0%	
42	Percent of land in crops.....	61.1%	68.4%	61.2%	68.6%	84.7%	80.4%	78.7%	72.5%	84.4%	
43	Corn—acres.....	34.8	32.0	25.0	70.0	78.0	71.0	29.4	30.8	22.8	
44	yield.....	36.7	44.2	36.3	55.0	59.1	48.5	15.4	9.8	15.8	
45	Oats—acres.....	6.0	3.0	5.0	53.2	51.0	66.0	15.4	9.8	15.8	
46	yield.....	14.3	10.0	12.5	42.7	45.2	37.4	46.1	37.0	45.0	
47	Wheat—acres.....	32.0	30.0	33.0	7.3	11.0	2.1	46.1	37.0	45.0	
48	yield.....	15.4	14.7	14.4	26.8	28.8	23.8	20.8	24.3	9.5	
49	Legumes—acres.....	18.0	19.0	11.0	19.3	9.0	20.0	68.5%	76.4%	55.3%	
50	Percent of receipts from all live stock.....	65.0%	64.3%	61.7%	43.5%	59.9%	25.9%	68.5%	76.4%	55.3%	
51	Returns from \$100 invested in productive live stock.....	119.30	182.07	\$ 77.68	107.30	\$ 119.30	\$ 58.87	120.81	\$ 145.00	\$ 87.93	
53	Returns from \$100 invested in horses.....	-4.98	-9.06	-9.56	-1.93	-4.53	-5.00	-4.55	2.00	-19.75	
54	Returns from \$100 invested in cattle.....	70.02	177.89	35.53	60.27	69.00	14.08	104.30	\$ 128.20	74.25	
55	Returns from \$100 invested in sheep.....	99.68	91.66	91.66	75.00	71.30	28.05	-18.75	217.20	75.20	
56	Returns from \$100 invested in swine.....	175.05	173.64	132.43	147.40	\$ 167.30	88.94	110.20	\$ 180.70	194.00	
57	Returns from \$100 invested in poultry.....	180.18	205.00	\$ 165.68	161.00	\$ 187.65	103.22	174.30	\$ 217.20	\$ 75.20	

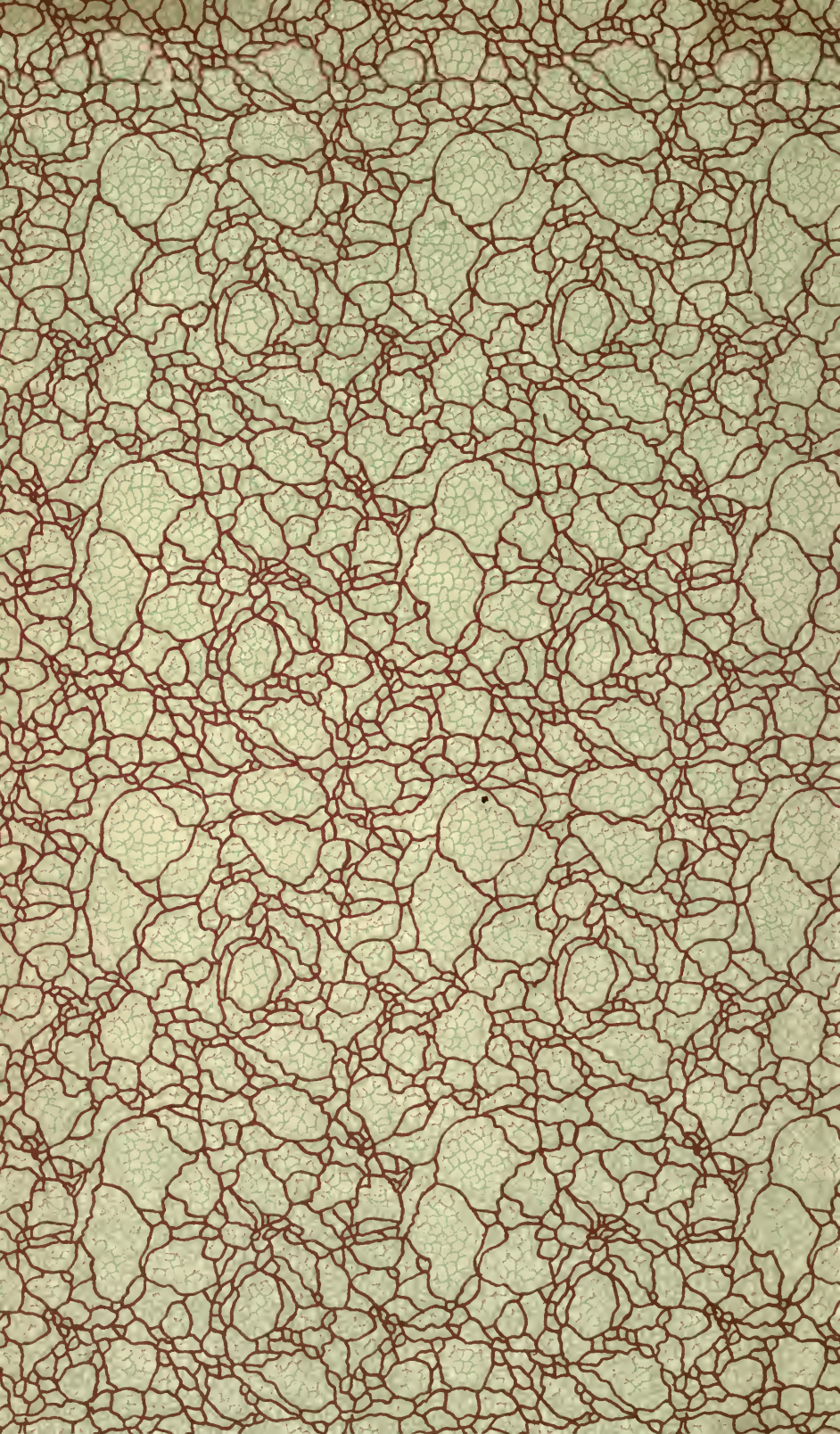
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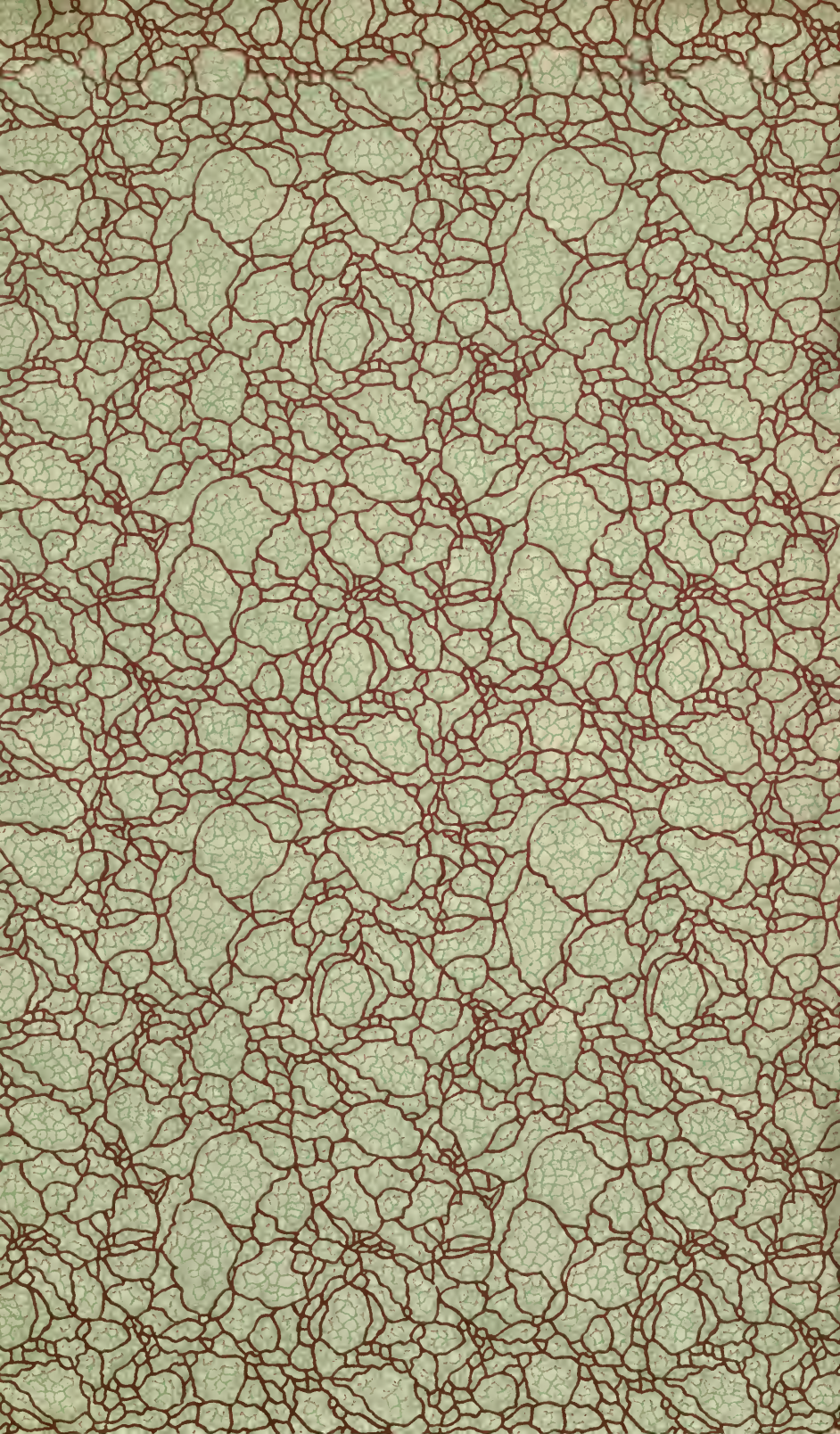
MEASURING A FARM'S SUCCESS.—Financial success in farming depends upon many factors, all of which taken together determine the profits from the farm business. In the preparation of this bulletin emphasis has been placed upon two measures of the earnings of the farm as a whole: (a) the labor and management wage (also called labor income), and (b) the rate earned on the investment. The *labor and management wage* is what a man has left to pay him for his own labor and management after deducting all operating expenses and a fair interest rate (5 percent) for the use of the capital invested in the farm business. The *rate earned on the investment* is what is left to pay for the use of the capital invested and the managing ability of the operator, after all operating expenses have been deducted and the operator has been allowed a fair wage for his own labor.

The nineteen seven-year farms described in this bulletin were studied and ranked on the basis of the *rate earned on the investment*. This method was followed for two reasons: first, it avoids controversy concerning the interest rate to be charged for the use of farm capital, which arises in determining the labor and management wage; and second, the authors believe that the difference in the income on the nineteen farms was largely due to the quality of the farm business, and that the rate earned is a better measure of quality than the labor and management wage when large investments varying widely in total amounts are involved. When the size of the farm business especially is to be studied, the labor and management wage seems to be the preferable measure of farm earnings. Also, when farms do not vary widely in size, the labor and management wage is a good measure of the farm business.

Size of business is not emphasized in this study since all the farms were large enough to have been operated efficiently. Most farmers regard a change in the internal organization of their farms as being more easily accomplished than a change in the acreage operated, especially if the purchase of the land is involved. The changes in internal organization most profitably and readily made seem to be changes in the quality of enterprises, such as increased production per animal and per acre, or decreased cost of production. Frequently, changes in quality will involve changes in the size of the separate enterprises within the farm business. It seems to the writers, however, that the quality of the individual farm enterprises should be studied before recommendations are made regarding the increasing or decreasing of the size of the enterprises. If a man is making more than a normal rate of interest on his investment, it is to his advantage to increase the size of his business as long as the additional capital which he invests will earn more than the going rate of interest on borrowed capital. Likewise, the successful handling of an individual enterprise on the farm should encourage a man to increase the size of that enterprise in so far as it does not interfere with the efficient operation of the farm as a whole.

In all analyses of the nineteen farms given in this bulletin, both the rate earned on the investment and the labor and management wage are shown, but the farms are ranked on the basis of the rate earned on the investment.





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